FLYING

DECEMBER 1947 • 25¢

UNIVERSITY OF MISSOURI
NOV 17 1947
LIBRARY
Periodical

FLYING INVESTIGATE

FIRST OF A SERIES O

GENERAL LIBRARY
UNIVERSITY OF MISSOURI
COLUMBIA

Packet-helicopter teams which will provide a rescue service for any spot on earth are one of the goals of the Air Force.

The need was dramatically demonstrated recently when the Air Rescue Service of the Air Transport Command transported helicopters in Fairchild's Flying Boxcars to the jungles of Nicaragua. Crew members of a Flying Fortress lost in the almost impenetrable jungle were located and transported to safety by this efficient team.

The C-82 Packet, with its huge unobstructed cargo capacity and its range can also serve the nation in peacetime as a fast, versatile "plane of mercy", flying in and out of short airstrips wherever the emergency needs of floods, hurricanes and other disasters require. Together with a helicopter which can hover like a humming bird over impassable terrain, they make an unbeatable team that offers welcome protection to civil and military aviation all over the world.

Fairchild Aircraft

Division of Fairchild Engine & Airplane Corporation, Hagerstown, Maryland

It takes a 2375-gallon drink upstairs without spilling a drop

SUPPLYING THE COLOSSAL THIRST of a new giant airplane called for a special system of fuel cells . . . one of them the largest ever built—2375 gallons!

The trick was to build a cell that big which would be leak-proof and self-sealing, would withstand shock and the strain of sloshing fuel, and would have minimum weight.

War-proved B. F. Goodrich fuel cell material, together with special bracing designed by B. F. Goodrich engineers, turned out to be the ideal answer. The 300 square foot cell was actually lighter than the plane manufacturer called for. And in AN tests a sample cell proved highly successful in withstanding the effects of pressure, load, negative pressure, sloshing, vibration and puncture.

The remarkable performance of this B. F. Goodrich self-sealing fuel cell results from its sandwich construction. An inner layer of rubber keeps the aromatic fumes, vital to the potency of aviation fuel, securely imprisoned. Two layers of sealant rubber swell on contact with the gasoline, prevent leakage in case of puncture. And rayon cord plies provide toughness and abrasion resistance.

This cell carries 2375 gallons of fuel aloft, through rapid altitude changes and fast maneuvers, without losing a drop. Other self-sealing fuel cells and bladder-type cells are produced by B. F. Goodrich to fit all types of planes. These fuel cells are a good example of how B. F. Goodrich keeps pace with the needs of the aviation industry. B. F. Goodrich is constantly working to make planes ever better, cheaper and safer. *The B. F. Goodrich Company, Aeronautical Division, Akron, Ohio.*

B.F.Goodrich
FIRST IN RUBBER

Chairman of the Board and Publisher
WILLIAM B. ZIFF

President
B. G. DAVIS

Secretary-Treasurer
ARTHUR T. PULLEN

Vice-Presidents

GEORGE BERNER
Advertising and Sales Director

MICHAEL H. FROELICH
Editorial Director

H. J. MORGANROTH
Production Director

H. G. STRONG
Circulation Director

Art Director
HERMAN R. BOLLIN

THE COVER: Bonanzas at Beech Factory, Wichita. Striped plane is radio-controlled for tests. Photo by A. E. Haug.

EDITORIAL

Editor
MAX KARANT

Managing Editor
CURTIS FULLER

Associate Editors
FRED HAMLIN
GAITHER LITTRELL
JUSTINE FEELY
CHARLES L. BLACK

Art Editor
LEW. MERRELL

Staff Photographer
ARTHUR E. HAUG

ADVERTISING

Eastern Advertising Manager
FRANK BENNETT

Midwestern Advertising Manager
WILLIAM M. SPRINGER

Western Advertising Manager
WILLIAM L. PINNEY

BRANCH OFFICES

NEW YORK (1)
Empire State Bldg., WI 7-0400
Manager, Eastern Division
Charles R. Tighe

LOS ANGELES (14)
815 S. Hill St., TUcker 9213
Manager, Western Division
William L. Pinney

TORONTO
21 King Street, East

ASSOCIATED COMPANIES

Ziff-Davis, Ltd., Grampians Bldg
Western Gate, London, England

Ziff-Davis-Patel, Ltd.
190 Hornby Road, Bombay, India

FLYING

DECEMBER • 1947

NATIONAL POLICY

An Army Streamlined to 1939 ..... William B. Ziff 17
Is G.I. Training Good for Aviation?
Yes ..... Phillips J. Peck 31
No ..... William Welsh 31
A Research Plan for Private Flying ..... T. P. Wright 43

CIVIL AVIATION

Flying Club of the World ..... John H. Lancaster 22
The Flying White House 24
'Operation Beachhead' 26
Tournament in the Clouds 36
Breakfast Flight 48
FLYING's Check Pilot—The Taylorcraft Model 47 52

MILITARY AVIATION

Air War on the Bug ..... Lieut. Col. Allan B. Crunden, Jr. 19
Jet Boat 35

WHERE TO FLY

West Indies Air Cruise ..... Monroe H. Sweet 40
FLYING Holidays
The Florida "Ridge" 44
Eastern Maine 46

AIRPORTS AND OPERATIONS

This Is Private Flying ..... George E. Anderson 28
Diary of an Airport Operator ..... Robert Meyer with Jerry Leichter 38

ENGINEERING

I Hold the World's Speed Record ..... Maj. Marion E. Carl 32
Prize Pigmies 50

DEPARTMENTS

The Mail Box 6
Jottings 8
Report from Washington ..... Fred Hamlin 54
Have You Seen? 55
I Learned About Flying From That! No. 97 ..... John W. Clark 58
AOPA News 60
Chart Calendar 62
Fifteen Years Ago 68
Do You Know? 72
Photo Credits 100

COPYRIGHT 1947
ZIFF-DAVIS PUBLISHING COMPANY
185 North Wabash Ave., Chicago 1, Ill.
Member of the Audit Bureau of Circulations

VOLUME 41 • NUMBER 6

FLYING is published monthly by Ziff-Davis Publishing Company at 185 N. Wabash Ave., Chicago 1, Ill. SUBSCRIPTION RATES: In U. S., Canada, Mexico, South and Central America and U. S. Possessions, $3.00 for twelve issues; in British Empire, $4.00; all other foreign countries, $4.00 for twelve issues. Subscribers should allow two weeks for the change of address. Address all subscription letters to the Director of Circulation, Flying, 185 North Wabash Avenue, Chicago 1. Entered as second class matter, September 8, 1942, at the Post Office, Chicago, Illinois, under the act of March 3, 1879. Entered as second class matter at the Post Office Department, Ottawa, Canada. Contributors should retain copy of contributions. All submitted material must contain return postage. Contributions will be handled with reasonable care, but this magazine assumes no responsibility for their safety. Accepted material is subject to whatever adaptations and revisions are necessary to meet requirements. Payment covers all authors', contributors' and contestants' rights, title and interest in and to the material accepted and will be made at our current rates upon acceptance. All photos and drawings will be considered as part of the material purchased.

SUCCESS TO YOU AND YOUR NEW

CESSNA 195!

Bubbling over with high hopes and enthusiasm? Planning to have yourself a wonderful time with that grand new, brand new little Cessna? Well, brother, when you come down to earth . . . anywhere in the big, wide Middle West . . . look for the orange and black shield with wings on it. That's right! That's the Phillips 66 sign . . . the sign of fine aviation products!

At big city airports, and at numerous small landing fields from the Dakotas to Texas, just taxi up to the Phillips pump and toast your new love in Phillips 66 Aviation Gasoline. It's a pledge to happy days . . . and clean, sweet engine performance!

May we add, also, that Phillips fuels some of the most important airlines that serve the mid-west territory. The Aviation Department, Phillips Petroleum Company, Bartlesville, Oklahoma.

Phillips 66

AVIATION GASOLINE

WAR SURPLUS BARGAINS

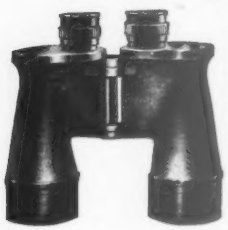
NEVER HAS THERE BEEN SUCH A SENSATIONAL BARGAIN AS THIS!
BUBBLE SEXTANT—TYPE A-10

Used by the Army Air Forces, these Bubble Sextants cost the Govt. about $125.00 each to make. At our price of $12.50, you can quickly see that this is a wonderful bargain. Included with your Bubble Sextant shipment will be a sturdy wooden Carrying Case, equipped with catches and handle, 5 spare waxed paper discs, flashlight with rheostat for using Sextant at night. (Uses ordinary flashlight cells which are not furnished.) Auxiliary 2 Power Galilean Telescope for use on faint stars, Allen wrench, 1 spare marking point. Though wartime used, these Sextants have been, where necessary, completely repaired, collimated, and put in good working order. The light bulb has been tested. The Bubble is in working condition. All other working parts have been checked and are in good order. Because these Sextants have been wartime used, we make the following guarantee: if you are not satisfied that our Sextant is exactly as we represent it, return it within 10 days and your money will be refunded. Full directions on how to use the Bubble Sextant will accompany your shipment.
Stock #924-D.....$12.50 Postpaid

TYPE A-10A . . . . Same **SEXTANT** as above, but brand new and with Automatic Electric Averaging Device and illuminated Averaging Disc for nighttime use. Govt. cost $217. Though brand new, we have re-checked Bubble and Collimation and guarantee perfect working order.
Stock #933-D.....$22.50 Postpaid

ASSEMBLE YOUR OWN BINOCULARS!

Complete Optics! Complete Metal Parts!
Save More Than ½ Regular Cost



GOVT'S 7 x 50 BINOCULARS. Here's an unusual opportunity to secure a fine set of Binoculars at a substantial saving of money. Offered here are complete sets of Optics and Metal Parts for the Govt's M-16 7 x 50 Binoculars. These components are new and all ready for assembly. We supply full instructions. Limit—1 set of Metal Parts and 1 set of Optics to a customer.

METAL PARTS — Set includes all Metal Parts —completely finished— for assembly of 7 x 50 Binoculars. No machining required. Bodies have been factory hinged and covered. A sturdy Binocular Carrying Case is optional with each set of Metal Parts.
Stock #842-D....$39.40 Postpaid, plus $4.80 for Case. **Total $44.20**

OPTICS—Set includes all Lenses and Prisms you need for assembling 7 x 50 Binoculars. These Optics are in excellent condition—perfect or near perfect—and have new low reflection coating.
Stock #5102-D.....7 x 50 Optics.....$25.00 Postpaid

NOTICE! Add 20% Federal Excise Tax to above prices if you order **both** Binocular Optics and Metal Parts.

AIR FORCES GUN SIGHT—With Polarizing Variable Density Attachment. (Polarizing attachment alone is worth many times the price of entire unit.)
Stock #908-D.....$5.00 Postpaid
Same Unit Without Polarizing Attachment
Stock #916-D.....$2.50 Postpaid

BOMBER SIGHTING STATION—A double end Periscope Type Instrument of highest precision. 6 ft. tall, shipping wt. 360 lbs. Orig. cost $9,850. Consists of numerous Parts and Electrical Gadgets.
Stock #914-D.....$50.00 F.O.B. Oklahoma

WE HAVE LITERALLY MILLIONS OF WAR SURPLUS LENSES AND PRISMS FOR SALE AT BARGAIN PRICES. WRITE FOR CATALOG "D"—SENT FREE!

Order by Stock No. • Satisfaction Guaranteed

EDMUND SALVAGE CO.
P. O. AUDUBON, NEW JERSEY

THE MAIL BOX

THOMPSON TROPHY RACE

I was one of the participants in the "Bloody '47" National Air Races. This letter isn't sour grapes but merely a statement of the facts as they appeared to me.

First of all, I resent the competition between civilians and the U. S. Navy in the Thompson Trophy race. This may sound like a bold charge but every pilot and plane owner at the Nationals had a very

frustrated feeling when they saw three Goodyear *Corsairs* procured from the War Assets Administration.

Here's why it doesn't add up to me. An ex-Navy pilot procures three out of seven experimental planes with *Wasp Major* engines (the same engine that powers the Lockheed *Constellation)* at a rumored price of $1,200 each for engines and airplanes easily worth $3,000,000 per plane. Navy maintenance crews service the planes at Cleveland and don't even bother to take off their uniforms. The airplanes are flown from Olathe, Kan. This town has a civilian maintenance depot but it also has one of the largest Naval training bases in the country, where the airplanes were reconditioned.

The crew chief of the winning *Corsair* went to the Goodyear factory and watched the airplane being built, was assigned to it at the Naval Air Station at Jacksonville, Fla., and came to the National Air Races "on leave" to maintain the airplane.

If the National Air Races are to continue to be the great sporting attraction and example of fair play plus clean sportsmanship they have been in the past, this sort of competition cannot be allowed to go on.

If it does, the Armed Forces are liable to have a set of red faces, especially if a civilian beats them.

A 1947 PARTICIPANT

Arcadia, Calif.

PALM SPRINGS AIRPORT

Having read Miss Nelson's little "tidbit" on the Palm Spring breakfast flight in "The Mail Box" (October issue), I should like to add my comments.

Brother, it was murder! I had a plane based there, but I didn't go near it. Mr. Downie wasn't the only one with a camera that day but he was the only one with nerve enough to get within range.

There are some things about Palm Springs Airport which I think should be mentioned. Most transient pilots avoid this airport if they are familiar with the existing conditions and gas up at Banning or Indio. Reasons are: (1) Landing fees as high as $7.50, depending on the plane; (2) A fee of $5 for turning on the boundary lights for transient night pilots. This is okay for the millionaire west-coast glamor class, but not everyone belongs to that.

How do I know this? I used to live in that part of the country and used the field before Miss Nelson took over. For sometime before that I had kept my ship there by permission of the engineers in Los Angeles who had jurisdiction at that time. When Miss Nelson took over I asked her what she would charge for tie-down. She told me $15. I was taken ill for a couple of weeks and was informed on arriving back at the field that I owed $25. At Banning, two miles up the pass, I could hangar my ship for $20 a month and keep it out of the sand. (Incidentally, I didn't pay that tie-down fee).

DAVID C. MILLS

Evansville, Ind.

MORE DATA ON NEW HAMPSHIRE

I should like to add a word about the license situation in New Hampshire. I operated a seaplane base at Laconia last summer and, in accordance with the state law, my employer sent in a check with my application blank. To this day I

haven't seen my license though the cancelled check was returned to him promptly.

I now have a Vermont license at a considerably cheaper fee of $1 and there was but a three-day wait for it.

JOHN S. FENNO

Vergennes, Vt.

NO BEEF ABOUT CUSTOMS

Your "Letters" section (September issue) carried quite a beef regarding difficulty with customs and immigration services on entry into Canada. I wish to offer my recent experience in rebuttal.

We recently flew our *Supercruiser* directly from New York to Prince Edward Island, Can. Studying the Airman's Guide we found that "departure must be made from an airport of entry according to information contained therein, unless

(*Continued on page* 93)

Standard Altimeter — Range 20,000 ft. Settable pointer, 10,000 ft. per revolution. Barometric subdial. $24.00

Sensitive Altimeter — Range 20,000 ft. 1,000 ft. per pointer revolution. 20-foot graduations. $70.00

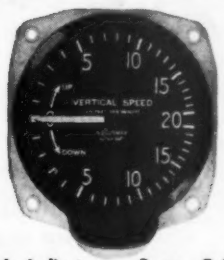
Air Speed Indicator — Furnished in 160 and 200 MPH models. Connections in rear of case. $24.00

For The Private Plane

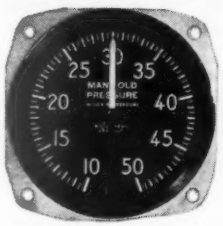
Scout

Aircraft Instruments by KOLLSMAN

Now! The Best Costs So Little!



Climb Indicator — Range O-2000 feet per minute. Zero adjustment. Widely spaced graduations. $50.00



Manifold Pressure Gage — Range 10 to 50 in. of mercury. Temperature compensation. $30.00

Tachelog — Shows engine RPM. Also registers total engine hours and tenths. $50.00

Compass — Standard 3⅛" mounting. Compensating screws. Compensating card. $30.00; Std. 2¼" unit, $18.00

All instruments (except the small compass) fit AN standard 3⅛" mounting holes. A standard cutout for the adjustment or setting knob on the Altimeters and Climb Indicators allows for interchangeable mounting of these units

Every experienced flyer is aware of those many circumstances in which a plane is no better than its instruments. That's why pilots everywhere have so enthusiastically welcomed Kollsman quality in the moderately priced Scout line of private plane instruments.

You will find Scout instruments as original equipment on the leading new private planes with provision made for adding more of them at the owner's option. And Scout instruments may be readily installed in your present plane by your own aircraft dealer or service operator.

The new Scout line offers rugged, accurate, trustworthy instruments of a quality never before within the reach of the average private owner. With these Kollsman-quality instruments the private plane can now enjoy a new measure of safety and utility based on instrument accuracy and dependability.

For complete information on Scout Aircraft Instruments write Kollsman Instrument Division, Square D Company, Elmhurst, New York.

KOLLSMAN AIRCRAFT INSTRUMENTS

PRODUCT OF

SQUARE D COMPANY

ELMHURST, NEW YORK • GLENDALE, CALIFORNIA

Give USEFUL GIFTS

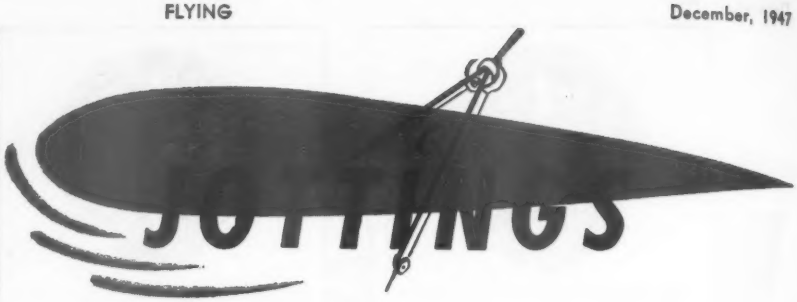
SPECIAL TOOL SELECTIONS AT YOUR PLOMB DEALER NOW

"Boys" from 6 to 96 love good hand tools... to use on the job or around the home. For gifts that men prize highly, choose tools. And select the best—Plomb Prime-Quality Tools. Your Plomb Dealer has a complete line in a wide range of prices. See him today. Write for catalog to

PLOMB
TOOL COMPANY
2219M Santa Fe Ave.
Los Angeles 54, Cal.

4769

PLOMB
Prime-Quality
TOOLS



. . . **Probably the first Piper Cub licensed to fly from Germany** was the 65 h.p. model bought for £75 by Tommy Campobasso, American Overseas Airlines maintenance foreman, at a U. S. surplus sale in Berlin and flown to Rineanna Airport in Eire. Cost of the plane in Ireland would be about £1,000. Only incident of the long flight reported by the flyer was when he landed in the Russian zone and carried out a hurried maintenance job by tying up the fuel filter ball with his necktie. He saw Russian military lorries speeding up the road as he was climbing into a cloud.

. . . **A herd of buffalo** challenged a Pan American Clipper recently for use of Big Delta Airport in Alaska. The four-engined plane, with a full load of passengers, landed briefly at the airport while waiting for weather to clear at Fairbanks. While the plane warmed up for take-off, 150 buffaloes moved over to the landing strip to graze. It took several soldiers in jeeps to drive them to one side.

. . . **Republic has discontinued** production of the *Seabee* but will continue to provide spare parts and service for the planes sold. Reason given by President Mundy Peale was the "need of all Republic's production facilities for the manufacture of other types of airplanes." He also disclosed that the company is carrying on negotiations for the sale of *Seabee* production rights.

. . . **Lightplane pilots can now carry emergency landing flares** at a real saving in weight with the portable parachute flare kits designed by the Flare Signal Division of The Kilgore Manufacturing Co. The complete unit has been approved by CAA for night operations in planes up to 3,500 pounds gross weight. The kit contains five one-minute flares and a 37-mm. flare pistol. Complete weight is only 11 pounds.

. . . **Ice free vision** is assured Stratocruisers pilots with the installation of electrically-heated Nesa glass windshields in the cabin, Boeing officials have announced. Developed by Pittsburgh Plate Glass Co., Nesa is a transparent sandwich—plate glass on the outside and clear vinyl plastic in the middle. On the inner surface of the outer layer is a film of transparent but electrically-conductive material. By passing a current through the coating, regulated heat can be applied to the glass at all times, keeping it ice- and fog-free during adverse weather conditions.

. . . **Fly seaplanes quietly** or they may be unwelcome at water resorts all over the country, T. P. Wright, CAA Administrator, recently warned owners. Since the sure remedy, a quiet plane, is not immediately in prospect, the only solution is to adjust methods of operation. The following suggestions are given: (1) take off as far out from the shore as possible; (2) cut the take-off run as short as safety permits; (3) fly high enough to avoid criticisms from residents below, or arrange the flight plan to pass over as few houses as possible; (4) avoid unnecessary gunning or racing of the engine; and (5) explain to those who complain what you are doing to make your airplane a good neighbor.

. . . **Washington National Airport,** only commercial field owned and operated by Uncle Sam, has balanced its books after six years of operation with $3,556,115 in revenue. Measured against Congressional appropriations of $3,620,431 for operation of the airport, this brings the net Government cost for running one of the world's largest airports to a little more than $10,000 per year. Rents and services provide the largest slice of the airport's income. In an average year, visitors drop $35,000 in dimes in turnstiles just to watch planes land, unload, load and take off.

. . . **A senior or command pilot may clear himself** at the model weather station now being initiated at Bolling Field. Newly-installed cross-sectional display panels of prevailing weather conditions make this possible. Pilots other than these must have a forecaster sign their clearance at present, but future plans indicate that all pilots will be able to brief themselves. END

EASY DOES IT . . . IN A SWIFT 125

EASY DOES IT . . . . . EASY DOES IT . . .

OWNERS say the Swift 125 is easy to fly and easy on the pocketbook.

One of the first things you notice in flying the Swift 125 is its natural stability in any position and its safe stall characteristics. If you are a pilot who has not had many hours you will appreciate the fact that the Swift 125 does not stall violently and recovers faster than most other light airplanes.

It is easy to see why the Swift 125 is easy to fly. The 125 HP engine gives plenty of power for short take-offs and rapid climbing . . . with cross country range. Hydraulic wing flaps give you slow landing and easy control over landings and take-offs. Landings on rough fields are smoothed out by the hydraulic shock absorbers and 9-foot 9-inch wheel tread.

Tying your Swift 125 out in the weather won't do any damage to that gleaming all-metal skin, and the cabin and engine are weather sealed. If you happen to damage a wing, repairs are quick and economical because wing tips and wing sections are easily replaceable. Swift owners say maintenance costs are amazingly low.

You are invited to fly a Swift 125 at your Dealer's

All-metal construction means all-weather protection

See for yourself how easy it is to fly a Swift 125, the kind of airplane that pays its own way in utility and time saved. You can get delivery RIGHT NOW.

$3,250 STANDARD 125 H.P., F.A.F. DALLAS, TEXAS
Deluxe equipment listed in this ad costs about $500 extra. Immediate delivery.

WRITE FOR THE NAME OF YOUR LOCAL SWIFT DEALER

METAL TOP CANOPY (DELUXE MODELS)
TWO-WAY GE RADIO (DELUXE MODELS)
OIL COOLER RADIATOR (DELUXE MODELS)

ALL-METAL CONSTRUCTION
HYDRAULIC SHOCK ABSORBERS
MODERN LOW-WING DESIGN
RETRACTABLE LANDING GEAR
AEROMATIC PROPELLER (DELUXE MODELS)

125 H.P. CONTINENTAL ENGINE
140 M.P.H. CRUISING SPEED
CONTROL-TOWER VISION
STEERABLE TAIL WHEEL
HYDRAULIC FLAPS

THE Swift

TEXAS ENGINEERING & MANUFACTURING CO.
Box 6191F • DALLAS, TEXAS

THERE'S A PLACE FOR YOU IN AV
SPARTAN
A UNIVERSITY OF AVIATION
SCHOOL of AERONAUTICS
MAXWELL W. BALFOUR, DIRECTOR
COLLEGE of ENGINEERING
ADDRESS DEPT. F-127
TULSA, OKLAHOMA

AVIATION • THE INDUSTRY THAT IS GOING PLACES

Aviation is going places. Over a thousand new airports . . . nearly two hundred new airliners . . . aircraft registrations almost doubled—all within the past year! Plan your career in a young industry that is still growing . . . that is destined to be among the world's greatest . . . an industry that offers untold opportunities to young men with character, vision and ability backed by thorough, practical training. Spartan can give you that training. It has a faculty of one hundred and fifty highly-trained instructors whose combined knowledge covers every phase of aviation. Their practical experience enables them to know and to teach the practical short cuts that speed production and save time. Back of these instructors are the planes, the instruments and the equipment with which you will work, with additions being made constantly to keep pace with the industry. Here, you receive the individual attention needed to progress as rapidly as you grasp the problems and their solutions. Don't wait! Aviation will not wait! Now is the time to make the decision and start the training that will lead to future security and success in the industry that has the most promising outlook.

SPARTAN IS RECOGNIZED AROUND THE WORLD

Wherever there are aircraft . . . you'll find Spartan graduates. With the airlines of the world, in factories building power plants, instruments or airframes, in weather stations, on the flying fields, you'll find them; all progressing with knowledge and experience gained at Spartan, the University of Aviation. Spartan has world wide recognition. Here, studying and working together are young men from Iceland, Bolivia, Colombia, Peru, Venezuela, Hawaii, Mexico, Canada, Puerto Rico, Cuba, Belgium, Brazil, Palestine, India and South Africa, as well as from all over the United States. These men are going to be leaders in world aviation.

YOU WORK ON "LIVE" AIRCRAFT AT SPARTAN

Just ONE of the many advantages of securing your aviation training at Spartan is that you work on "LIVE" aircraft, on the same type of planes and under the same conditions as on the job you accept after graduation. You will feel perfectly at home on your new job for you will have done the same type of work at Spartan. You are invited to visit Spartan School of Aeronautics and see for yourself the extensive outlay of equipment and facilities for student instruction. Then compare it with what you have seen at any other school.

There Is No Substitute for Spartan Aviation Training

Spartan's Personal Counselling Service is available to you for the asking.

Maxwell W. Balfour, Director
Spartan School of Aeronautics Dept. F-127
Tulsa, Oklahoma
Please send your free 64-page Catalog immediately.

Name_____ Age____

Address_____

City_____ State____

Indicate which of these branches interests you:

Flight	Instruments
Mechanics	Aeronautical Engineering
Radio	Airline Maintenance Engineering
Meteorology	Management and Operations

Spartan is approved for training under the G. I. Bill of Rights

Talk About Records Look At This One

Each Year more manufacturers buy more FLIGHTEX than any other airplane fabric.

World's Premier Airplane Fabric FLIGHTEX FABRIC

FLIGHTEX

FLIGHTEX FABRICS, INC. • 93 Worth Street, New York 13, N. Y.

Leading Manufacturers of Fabric and Tapes for the Aircraft Industry

Export Representative—Aviquipo, Inc. 25 Beaver St., N. Y. Cable Address—"Aviquipo"

RESALE DISTRIBUTORS

AERONAUTICAL TRADING CO, Jamaica, N. Y. • AIR TRANSPORT EQUIPMENT INC, Mineola, N. Y. • AVIATION SUPPLY CORP, Hapeville, Ga, Orlando, Fla, Coral Gables, Fla, Charlotte, N C, Nashville, Tenn. • BUFFALO AERONAUTICAL CORP, Buffalo, N. Y. • DURHAM AIRCRAFT SERVICE INC., BOB TRADER AERO SUPPLY DIV, Pittsburgh, Pa • EASTERN AIR-MOTIVE CORP, Richmond, Va. • GENERAL AIRCRAFT SUPPLY CORP, Detroit, Mich • GENERAL AIRMOTIVE CORP, Cleveland, O. • HOOVEN CO, Washington, D. C. • INTER CITY AVIATION, INC, East Boston, Mass • KARL ORT, York, Pa. • LEAVENS BROS. AIR SERVICE LTD, Toronto, Can • LOUISIANA AIRCRAFT, Baton Rouge, La • MUNCIE AVIATION CORP, Muncie, Ind • PACIFIC AIRMOTIVE, Burbank, Cal, Glendale, Cal, Oakland, Cal, San Diego, Cal, Fresno, Cal, Kansas City, Mo, Seattle, Wash, Phoenix, Ariz, Anchorage, Alaska, Linden, N. J. • PIEDMONT AVIATION, INC, Winston-Salem, N C • SNYDER AIRCRAFT CORP, Chicago, Ill, Columbus, O, Denver, Colo, Omaha, Neb • SOUTHWEST AIR-MOTIVE CO, Dallas, Tex • SUPPLY DIVISION, Inc, Robertson, Mo, Memphis, Tenn, Oklahoma City, Okla • THE AIRCRAFT STEEL & SUPPLY CO, Wichita, Kan, Oklahoma City, Okla • VAN DUSEN AIRCRAFT SUPPLIES, Minneapolis, Minn, Teterboro, N. J. • WEST AIR INC, Salt Lake City, U • WESTERN AERO SUPPLY, San Antonio, Tex.

Here's what Airport Operators say about

ESSO

"I CHOSE ESSO AVIATION PRODUCTS FOR... FINE PERFORMANCE"

Albert H. Hunker
Forsgate Airpark, New Jersey

"IT'S ESSO ALL THE WAY!"

George C. Brinckerhoff
College Park Airport, Maryland

"WE ARE SURE OF GIVING THE FLYING PUBLIC HIGH QUALITY... WITH ESSO"

Lucille M. Dingley
Auburn-Lewiston Airport, Maine

"...DEPENDABLE QUALITY"

Raymond J. Ellis
South Central Airport, Arkansas

"WE ARE GETTING FIRST CLASS PERFORMANCE"

J. David Finger, Bernard S. Chodos
Westchester Airport, New York

"BECAUSE I LIKE TO HAVE THINGS RIGHT"

J. Wayde Stewart, Parkersburg Municipal Airport, West Virginia

"CAN ALWAYS BE RELIED UPON BY EVERY USER"

John J. Richards
Chapman Air Service, Inc. Louisiana

"ESSO IS IN STEP WITH THE TIMES"

Findley Wilson, New Castle Airport, Pennsylvania

YOU CAN DEPEND ON

ESSO

AVIATION PRODUCTS

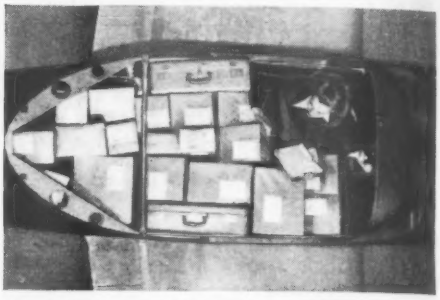
SOLD IN THE 25 STATES INDICATED

There's no doubt about it! Esso Aviation Products paint a hard-to-beat picture at airports from Maine to Texas – high-quality aviation products . . . courteous-helpful services . . . and customer satisfaction! It's sound, it's proved, it's profitable! If you'd like your airport to be a part of that picture . . . please contact your local Esso Aviation representative.

Big, Tough, Fast and Easy-to-Fly Safely!

SLIP BEHIND THE WHEEL of the new Ryan *Navion* and see for yourself why experts say it has "*the best combination of desirable qualities.*" Refined by Ryan's 25 years of know-how, the new *Navion* pays off in power, speed and smooth riding—even in rough air. Outstanding in small, rough field performance, the rugged, all-metal, 4-place *Navion* requires only 560 feet to take off; only 335 feet to land.

PLENTY OF LEG AND ELBOW ROOM for four people! The *Navion* cruises at 150 mph (with a 500-mile range) has a 185 hp engine and variable-pitch propeller.



CONVERTS to carry 645 pounds cargo in 55 cubic feet space. Hydraulic flaps, shock absorbers and retractable tricycle gear for smooth landing.

NEW *Navion* By RYAN

WRITE TODAY on your letterhead for fully-illustrated brochure and a demonstration by your nearest dealer. Orders filled in sequence; act now for early delivery. Address: Ryan Aeronautical Company, 112 Lindbergh Field, San Diego, Calif. (Some dealer territories open)

Rely on Ryan RYAN AERONAUTICAL COMPANY • SAN DIEGO

TRAIN FOR AN AVIATION CAREER IN SOUTHERN CALIFORNIA

AERONAUTICAL ENGINEERING
MASTER AVIATION MECHANICS

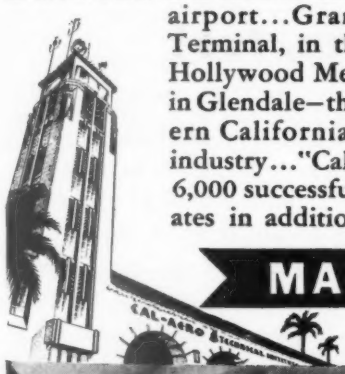
(NO FLYING INVOLVED)

Cal-Aero Technical Institute now has opening for a limited number of students!

MAXIMUM TRAINING IN MINIMUM TIME

Using modern training equipment, including jets, the courses are intensive, highly concentrated, complete and C. A. A. approved, with all non-essentials eliminated. Leadership training is stressed...Upon graduation you will be an aviation expert and fully qualified to hold a remunerative and responsible position in the aircraft industry, steadily forge ahead and add more dollars to your pay check...Established in 1929, "Cal-Aero" is one of the oldest, largest and most distinguished aeronautical schools in the world. It is located on its own famous airport...Grand Central Air Terminal, in the Los Angeles-Hollywood Metropolitan Area, in Glendale—the heart of Southern California's giant aircraft industry..."Cal-Aero" has over 6,000 successful civilian graduates in addition to more than 26,000 pilots and 7,500 aviation mechanics trained for U. S. Army and Navy Air Forces.

WE HAVE THE EXPERIENCE—THERE IS NO SUBSTITUTE FOR IT



NEW OPPORTUNITIES

750,000 new aviation jobs anticipated within 10 years (C.A.A. report) Boeing estimates need for Aviation engineers at 50,000 (news item).

Cal-Aero has solved the housing situation for its students. Your room, board and transportation are no longer a problem here.

APPROVED FOR VETERANS

TRAIN IN SUNNY SOUTHERN CALIFORNIA

MAIL TODAY—DON'T DELAY

BE WISE...PROTECT YOUR FUTURE

EST. 1929

CAL-AERO TECHNICAL INSTITUTE

GRAND CENTRAL AIR TERMINAL

GLENDALE 1, (Los Angeles County) CALIFORNIA

CAL-AERO TECHNICAL INSTITUTE
GRAND CENTRAL AIR TERMINAL, GLENDALE 1, CALIFORNIA

Send full information and catalogue free, on courses checked below:

- ☐ AERONAUTICAL ENGINEERING
- ☐ MASTER AVIATION MECHANICS
- ☐ SPECIALIZED ENGINE COURSE
- ☐ SPECIALIZED AIRPLANE COURSE
- ☐ POST GRADUATE AERONAUTICAL ENGINEERING
- ☐ COMBINATION MECHANICS AND ENGINEERING COURSE
- ☐ SPECIALIZED AIRCRAFT SHEET METAL
- ☐ HOME STUDY—AERONAUTICAL DRAFTING
- ☐ HOME STUDY—AIRCRAFT BLUEPRINT READING
- ☐ HOME STUDY—STRESS ANALYSIS AND DESIGN

NAME _____

ADDRESS _____

CITY _____ ZONE _____

STATE _____ BIRTH DATE _____ F-12

The "Mounties" have an Air Arm, too!

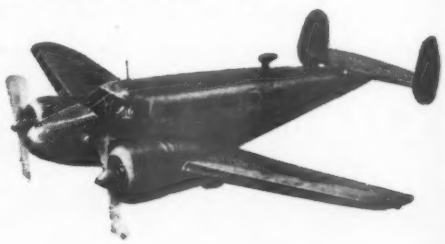
The Royal Canadian Mounted Police Force, world standard for efficiency in civilian protection since 1873, uses nearly every form of transportation known . . . including the airplane. Along with fine planes of Canadian manufacture, the "Mounties" are using Beechcraft twin-engine 18's because of their reliability, speed and cruising range in all kinds of weather.

Business can well borrow a leaf from the Mounties' book of experience. The Beechcraft twin-engine Executive Transport—equipped with every navigating facility and comfortable in the extreme—is ideal company transportation for both regular and emergency use. It accommodates up to nine people, operates with notable economy, and can land and take off from relatively small fields.

The hours—and fatigue—which the Beechcraft Executive Transport saves company officials and personnel make for an efficiency which is reckoned in dollars and cents by many of America's leading businesses. Your Beechcraft distributor is ready at any time to help you appraise your company's air transportation needs in the light of Beechcraft's wide experience in this field. Call on him.

Beech Aircraft

CORPORATION WICHITA, KANSAS, U. S. A.



☆

AN ARMY STREAMLINED TO 1939

THE WAY THINGS are going we cannot blind ourselves to the fact that the growing tension between the Soviet Union and ourselves easily could produce a shooting scrape. Operating just short of the chalkline of war always involves the risk that someone will miss his step and cross it.

In a real knockdown fight, the Russians will prove no pushover. They occupy a land area three times the space of the United States. They are smart, and with plenty of know-how. They are regimented to a single despotic will, and, as the Germans discovered, will not yield when the going grows tough.

Under the circumstances, good sense would dictate that we take every possible move to protect ourselves. Instead we have followed an opposite course, and have allowed our military defenses to disintegrate.

It is reliably reported that Russia now is manufacturing 50 military planes to our one. Rumors as to the extent of her air transport activity, pivotal to any adequate military system, indicate a rapid rate of expansion which could, in the predictable future, make the Soviet Union the Number One air power of the world.

In the strategic Far North, reaching well into the Arctic Circle, from Andyr on the Pacific to Port Tixt, Igara and Archangel, the Russians have built whole industrial cities. Some of these are said to contain up to 100,000 people and are served almost entirely by air. These are the springboards from which a crushing attack could be leveled almost instantaneously at all of the great industrial points of the United States.

All of this may be poo-poohed by our complacent "experts" as so much hogwash. Admittedly, the masters of the Kremlin alone know the nature and extent of Russian preparations. One of the classic mistakes in military history was that made by Count von Schulenberg, Hitler's envoy in Moscow, who informed the Nazi fuehrer that the Russians were weak and unready and would be a soft touch. It may be taken as axiomatic that the Russians have not settled back peacefully on their rumps while all the bellicose talk is going on. And as for the alleged inferiority of Russian equipment, it cannot be forgotten that the Japanese managed to mess us up pretty badly for a while with a piece of flying junk known as the Zero.

In the United States the great bulk of aviation manufacturers are either insolvent, or seeking to make ice boxes and prefabricated houses instead of planes—while the Russian plants are being expanded.

We may be mistaken in our judgments and the Russians may not want war, but they are getting ready for it.

What are we doing to meet this crisis?

Part of our plan lies in the huge international ransom by which our State Department hopes to buy the peace.

Another part of this strange blueprint involves the creation of a great conscript army. This, together with the Greeks, the Turks and the Saudi Arabians, is supposed to protect us, if and when the great test of wills comes.

No more dreadful illusion than this could possibly be entertained by a great people. Universal military training means that great contingents of raw youths will serve six months, for the most part parading in close-order rifle drill, or picking up cigarette butts and stabbing papers on police duty. In a real shooting scrape between great nations they would be just so many sitting ducks who might as well be equipped with bows and arrows as far as modern military efficiency is concerned.

The concept of military theory involved in the scheme of Universal Military Training is as inept and illusory as were the daydreams of Liddell Hart and General Gamelin, who believed in 1939 that a static war of defense would bring their nations victory. Modern invention, manufacture and military techniques make such an armed force a pure relic of military die-hardism. If it has any worth, it will be to police the people against panic amidst the rubble and devastation brought on by foreign attack.

A modern military machine is a highly organized, complex apparatus. It is composed of specialists and technicians, and places a premium on technical skill, mobility

Continued on the following page

and all-out concentrations of attack power. Its first principle is that the only good defense is a powerful offensive.

We seem to have forgotten that the great bulk of the marvellously-trained Japanese army ignominiously surrendered without having fired a shot.

Today the potentials of machine warfare are far advanced over what they were then.

In war of the future, great bodies of men will land directly by air in the center of the enemy's territory, in lightning operations, after the way has been paved by a shattering attack of bombers and guided missiles. Except for the mopping-up work, the entire operation will be primarily an air operation. Shattering surprise and massive destruction power will be brought to the highest point of military effectiveness ever visualized by man. Everything, including the supply trains, will be air-borne. Even in the case of germ and chemical warfare, the airplane will play the decisive role.

By its intrinsic nature such a battle plan demands not raw kids who file in and out of camps every six months, but a highly-specialized professional air army. For our purposes, it must aggregate a minimum of 2,500,000 men of all grades, the great bulk of whom regard the military profession as their life's work.

To create a conscript force, boys will have to be taken from the laboratory and schoolroom during the most impressionable period of their lives. Instead of the study-hall where our future technicians, scientists and executives must be made, these lads will have the drill-master and the hard-boiled top sergeant as teachers.

A program of this kind could not fail to do irreparable harm to the real interests of the country, setting back its technical progress by a generation.

The nation itself would be doped into a false sense of security.

The whole strategy of the nation would become hopelessly mired in the goo of this obsolescent military establishment. Not even an intelligible procurement program could be implemented. Procurement in terms of modern military emergency is a complex affair which depends on constant trial and use. War is no longer a business for amateurs, but demands the highly trained specialist instead.

To establish an adequate air army will prove expensive. But it will not be half as expensive as the Marshall Plan of international philanthropy, nor a fraction as expensive as a lost war.

A defense force of these dimensions must be made attractive to technicians, laboratory men, and smart young graduates from the colleges, who must be encouraged to find in military work a dignified and acceptable career. This means an end to the present silly regimentation, and the unattractive rates of pay, which draw into the lower grades of the armed forces the inept and untaught rather than the ablest young men of our nation. It means that men in the lower grades still must have the right to lead normal family lives, and not live like so many robots in barracks. They must have the same rewards for their know-how and abilities they might receive in civilian life.

With the great productive machinery of America behind such a defense establishment, neither Russia nor anyone else would dare entertain the idea of aggression against us.

The mere act of building this air force would tend to revitalize our dying aircraft industry, whose present desperate situation is the most dangerous phenomenon in America today. Only an industrial establishment which is strong and alive, can make for a military establishment which has the power to win. The two are interlocked and cannot be dissevered from each other.

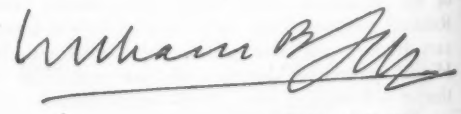
To assist the aircraft industry, we should endeavor to vastly expand commercial air transport. We could create better ground facilities, send all mail by air, and embark on an adequate airport program. Passenger rates could be raised still further so as to provide a fair and reasonable income for this type of fast transportation. Freight rates could be correspondingly lowered so as to allow for a greater density of operation in competition with the conventional ground services. The individual states could be enjoined from meddling with the strategic national business of flight, and the present increasing harassments halted. If the Government were to spend half the effort in encouraging air travel it has used in selling the nation on its international WPA projects, America could become a thoroughly air-minded nation in a matter of months.

On the same score, private flying also should receive the sympathetic attention of Government. Aviation easily could become a necessary subject in the public schools. Subsidies to private groups who wish to learn the art of gliding or flying, properly could be in order. In and out of the schools, 15,000 or 20,000 such groups could exist in the United States within a year. The planes and equipment they would use would entail a considerable amount of Government assistance, but the money would remain in America.

A group of 250,000 active flyers capable of handling small private planes would be of infinitely more value in time of trouble than all the conscript forces administration leaders can dream up. Trained as an auxiliary force under semi-military discipline, it could be used in an emergency for a myriad of purposes, where mobility, training and know-how would be critically required.

At the same time, by encouraging this development, a desperately-needed floor would be put under the light-plane industry, whose current troubles should be a cause of great concern to the nation.

Events are moving fast and there may not be much time left. Let us leave our youngsters in school where they belong. Common sense demands that we be done with the current crop of pipe dreams and illusions, and get down to cases. America can only be safe if she is strong; and strength in terms of this century means *unquestioned military superiority in the air*. Without this, nothing else counts, and with it, nothing else matters.



William B. Ziff

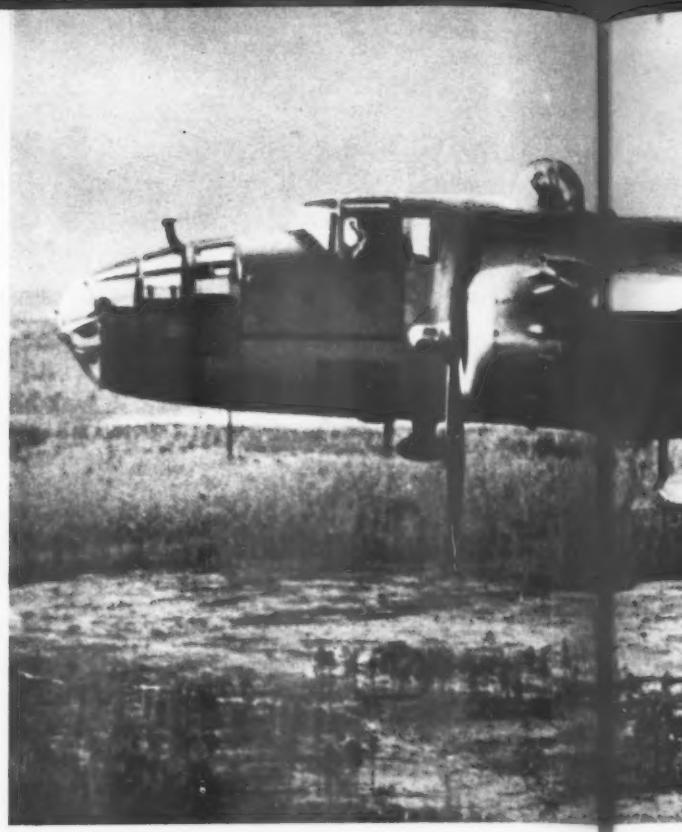
Two C-47's spray Manila with DDT. Germ-carrying fly swarms were spreading disease in the city.

Air War on the Bug

Disease bows out when Army sprays DDT from airplanes...

Air War on the Bug

continued



Applying Army experience, Idaho air-dusters plot anti-bug drive. Instructors Earl Shull, Leonard Tuthill, and Hubert Manis standing.

elicopter spray billows to earth. Mist forms when liquid is forced through holes in breaker bar below converted Navy R-4's tail rotor.

Spray plume trails behind B-25 equipped with the new streamlined straight pipe dispenser designed for use in high-speed aircraft (see inset). Tanks in this plane carry 565 gallons.

By

Lieut. Col. ALLAN B. CRUNDEN, Jr.

formerly of the Office of the Air Surgeon
Headquarters, Army Air Forces

WARPLANES are carrying new weapons these days—tanks of DDT instead of machine guns and bombs. The enemy is new, too. Insects—cause of much of the world's disease—are on the black list.

Using know-how acquired during the war, the Army Air Forces may play an important part in the campaign to eradicate disease-carrying bugs. Particularly in the tropical belt, these bugs have made pestholes out of potential paradises.

Now, with full tanks of DDT, the Army's B-25s, C-47s and other planes may fly over pestilence-ridden areas of the world, trailing behind a spray which deals the death blow to such diseases as malaria, yellow fever, bubonic plague, typhoid, cholera and dysentery.

Remarkable successes were experienced with spray operations during the war. When operations were threatened by a severe outbreak of dengue on Saipan, C-47s sprayed the entire island—our part as well as the Jap area—killed the mosquitoes and stopped the epidemic. When Manila, littered with filth and dead bodies, became a horror from a plague of flies, a fleet of C-47s sprayed the entire city, killing most of the flies. Newly-captured Mitykina in Burma was made safe for occupation by airplane spraying. Planes went ahead of troops and sprayed enemy areas before they were captured. Result of this large scale wartime use of the airplane for spraying operations was a greatly lowered disease and death rate.

If the program is carried over into a full-scale peacetime drive, many of the world's (*Continued on page* 72)

Breaker bars mounted under each wing of L-5 have 40 holes for spraying insecticide. Pressure pump is driven by propeller on strut.

Flying Club of the World

By JOHN H. LANCASTER

U. N. employees from 15 nations show they can cooperate learning to fly.

INTERNATIONAL bickering stops when United Nations staff members take to the air. That's the report from Lindenhurst, L.I., where about 60 U.N. employees from 15 nations have organized a flying club.

The U.N. club members log time at Lyons Flying Service on Zahn's Airport, at Lindenhurst. And their ground school is conducted right in United Nations conference rooms at Lake Success, L.I.

Seventeen club members are from the United States. France leads the foreign delegations with 14 members, England has six; China, three; the Netherlands, two; and Australia, Canada, Mexico, Panama, Haiti, Peru, Norway, Belgium, Poland and Egypt one each.

While top conferees haggled last March, two Frenchmen—Jacques Faugeras and Guy de Walincourt—decided that amity could be attained at least on lower levels of the U.N. hierarchy. They convinced another Frenchman, S. Leland Rosenberg. When Rosenberg attended the New York Aviation Show in January he met Ed Lyons, who operates Lyons Flying Service. Later, Rosenberg and Maj. Jan Eisenhardt of Canada, chief of U.N. staff activities, motored out to Lindenhurst. They liked Lyons' organization so much that they started the club.

First meeting was held March 26 and weekly ground school began the following Thursday. The French secretary of *(Continued on page 80)*

Checking gas and oil in Piper Cub are Gerald Wen of China, and J. Francois of France.

Explaining Widgeon's controls, Instructor Lyons talks to Ormond Abbott, U.S. (right).

United Nations Aviation Club
THIS IS TO CERTIFY
John Doe
is an active member of the United Nations
Aviation Club and is entitled to all rights and privileges
PRESIDENT

Club member Donald Sanford records talk by French delegate Parodi in Security Council.

Parachute is inspected by Canada's Jan Eisenhardt. Ed Lyons points to packing date.

Cross-country briefing group includes English, Polish, French, Mexican, U.S. students.

Ground school on U.N. administration building roof is taught by Jim Rogers, chief instructor (dark suit, center). Flyers l. to r., Sandford Major, U.S.; Jan Eisenhardt, Canada; Gerard O'Rooney, Gt. Britain; Jaime J. Cohen-Degovia, Panama; Rodrigo Arenas, Peru; Jean Rimoldi, U.S.; Mrs. Claude Day, France; Ormond Abbott and Eleanor Peebles, U.S.; Gerald Wen, China (back to camera).

PHOTOGRAPHS BY WALTER STEINHARD

Prop-spinning instruction is given to Henry Tolsa, Mexico, by Wm. George (hands up).

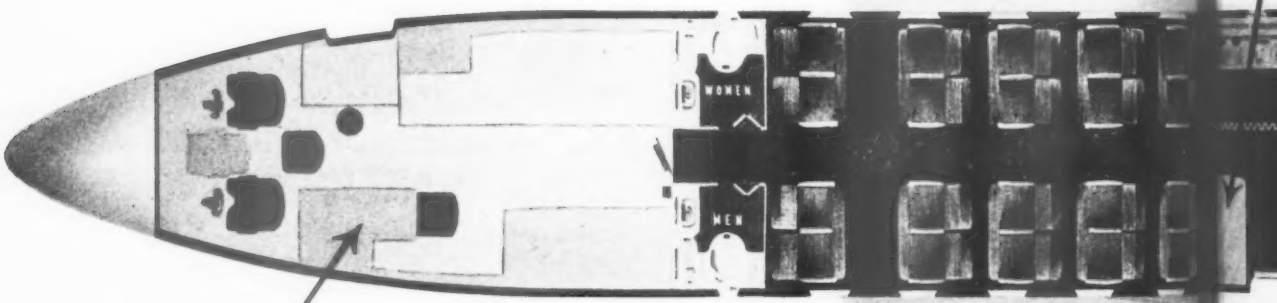
Spot landing attempt by U.N. flyer is made as instructor signals where to touch wheels.

U.N. flyers picnic at Zahn's Airport, which is about an hour's drive from Lake Success.

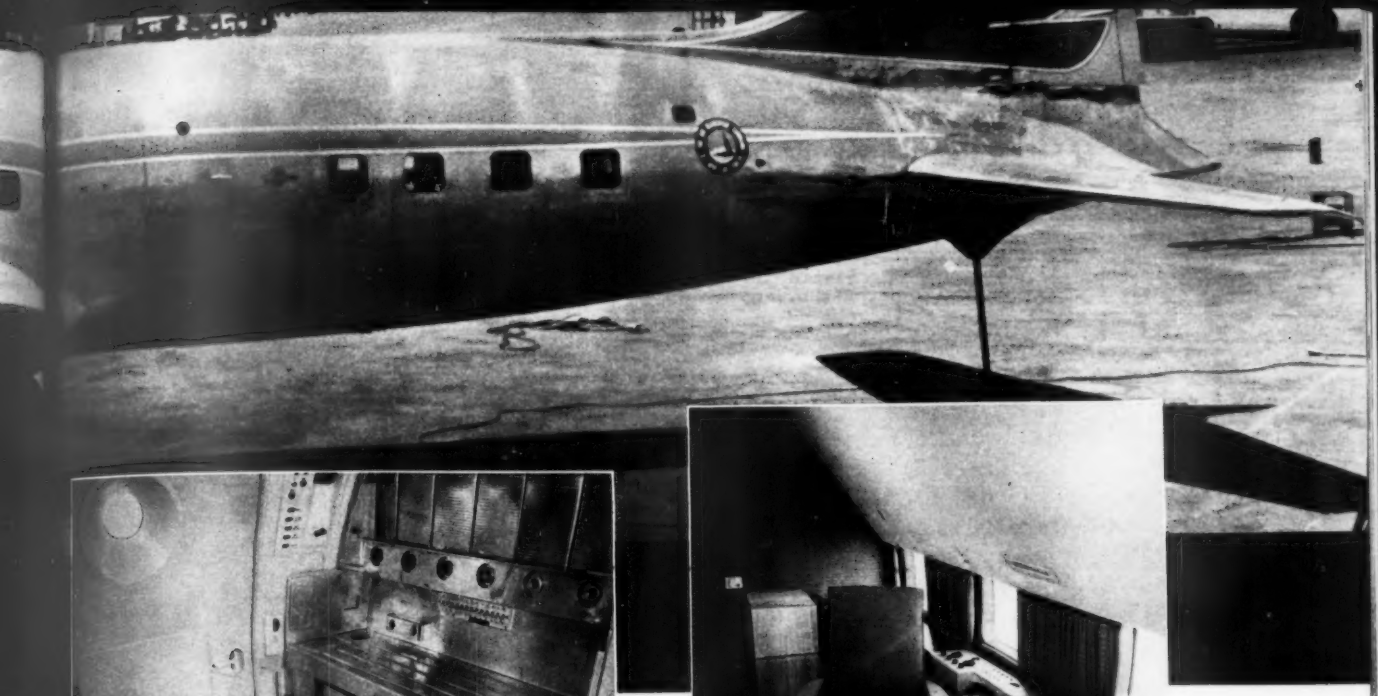
The Flying White House

The President can handle "business as usual" while spanning U.S. in new DC-6.

THE President's swank new Douglas DC-6 embodies advanced design for comfort, convenience and speed. Cruising at 315 m.p.h. with a 4,480-mile range, the plane will accommodate 25 passengers in its four-section, 67-foot cabin. The Chief Executive's stateroom contains a swivel chair, conference table, convertible bed-divan, telephone, map case, radio, private lounge, flight instruments and wardrobe. Official name of the Presidential plane is the "Independence," though newsmen have dubbed it "Sacred Cow II," after the famous wartime C-54 used by President Roosevelt. END

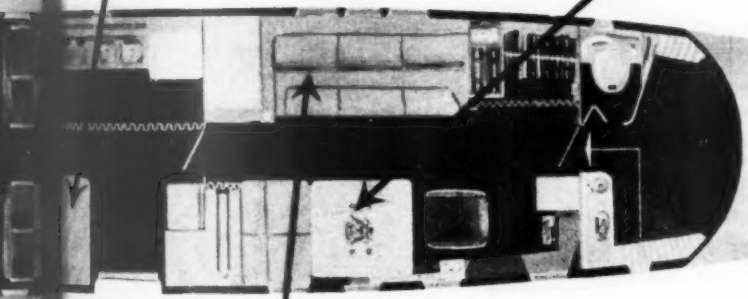


Presidential messages from DC-6 are sent over radio-teletype by Air Forces radioman, Sgt. C. A. Horton.



Galley of the "Independence" is equipped to prepare warm meals and hot and cold drinks.

President's conference table and chair are on port side of stateroom. Note radio, telephone.



From Mr. Truman's seat can be seen flight instruments, roll maps, clock over wardrobe and elkhide bed-divan.

Oldest and youngest on flight were 82-year-old twins, Mrs. Annette Howard and Mrs. Juliette Powers, and 16-month-old Ralph Pickel.

Seaplanes on Kala Point were turned tail to shelving beach and tied to improvised anchorages. Plane at right is taxiing to a take-off positio
Serving table (below) was made by hungry flyers from driftwood placed on logs near fire. Appetites were whetted by the salt air, and food ran ou

Flyers breakfast on potatoes, eggs and rolls (left) after Weldon Savage carries food ashore from Norseman (below). Plane's deep-draft floats prevented it from approaching closer to shore with provisions.

Seaplane flyers had gay time on Puget Sound breakfast hop — even though food ran out.

'Operation Beachhead'

IT ALL happened because one man got a crick in his neck. The result was sand in the scrambled eggs — and something new in the way of breakfast flights.

A flock of surprised seagulls who were suddenly evicted from their roosting ground on deserted Kala Point in northern Puget Sound still are ruffling tailfeathers indignantly over the whole thing.

The story begins with seaplane operator Lana Kurtzer standing on his hangar ramp in Seattle's Lake Union, watching landplanes soar overhead on breakfast flights. For over a year the Seattle unit of the Aircraft Owners and Pilots Association had staged the flights with clockwork regularity. Sunday after Sunday Kurtzer squinted up at scores of personal planes headed for breakfast in various Washington cities. But their destinations were land bases, and seaplanes stayed home. Seaplane pilots may have been envious; but they weren't doing anything about it. There was plenty of water but not near the right airports.

"I stared up there so often I finally got a stiff neck," Kurtzer complains.

He also got an idea—one that spurred him to leap the eight feet of water separating the Kurtzer Seaplane Terminal from its neighbor, the Seattle Sky Harbor. Kurtzer and Monte Pierce, Sky Harbor owner, went into a (*Continued on page* 82)

Impromptu dance session was held on beach while flyers waited for breakfast. Accordionist Frank Sugia played for the barefooted dancers.

This is Private Flying

FIRST OF A SERIES

FLYING sends plane and pilot around the country to see what happens to the average private flyer.

By GEORGE E. ANDERSON

The author has been a pilot since 1940, an A&E since 1941. Because of his experience in checking "gripe" airports for AOPA, he was asked to make the survey on which these articles are based. During the war, Anderson was an engineer on B-29 engine nacelles and control surfaces. Currently he is in charge of non-scheduled line maintenance, Sky Supply, Washington, National Airport.

IS "THE BITE" a figment of a few disgruntled pilots' imaginations?

Is the average airport operator a bandit?

Are his line boys and helpers and mechanics a shiftless, incompetent lot?

Must the average transient pilot expect to be robbed blind?

Must he put up with filthy rest rooms, unwholesome restaurants, expensive gasoline, expensive transportation to town, every time he stops at a new airport?

Are small towns and airports air-marked? Are airport operations conducted efficiently? Are operators courteous and helpful?

These are some of the questions I was assigned to answer, in perhaps the most complete flying survey of its kind ever undertaken in this country. This is the first of a series of articles to be published in FLYING in which I have attempted to answer these questions. Other articles will follow in subsequent months.

Every reasonable effort has been made to assure impartiality. Before starting on the first leg of this survey flight the editor of FLYING, officials of the Aircraft Owners and Pilots Association and myself, held several conferences in Washington and Chicago. "Trouble spots" around the country were listed by AOPA. A standard procedure form was worked out, so that each airport received the same type of checking. A special form was printed on pocket-sized cards, so that I could record pertinent data quickly, and yet not appear conspicuous.

Another list I carried showed a preselected number of typical operations I could ask to have performed on the airplane. This list, incidentally, had to be revised somewhat when we decided to use an all-metal Luscombe. The list originally had been com- (*Continued on page* 62)

Open primer is quickly found by mechanic at Santa Ana, Calif., field (above). Here he is explaining it to author (in plane) and foreman. There was no charge.

Airport Name.....

City and State.....

Date.....

	Excellent	Average	Poor
Condition of landing area	☐	☐	☐
Neatness of buildings and hangars	☐	☐	☐
Cleanliness of rest rooms	☐	☐	☐
Safety provisions against fire; crash and first-aid equipment	☐	☐	☐
Repair service (competency) for aircraft and engine	☐	☐	☐

Markings.....Sock ☐ Tee ☐

Gas and Oil.....Price.....Name.....

Shop facilities	☐	☐	☐
Shop rates	☐	☐	☐
Promptness and courtesy of service by airport personnel	☐	☐	☐
Transportation to town	☐	☐	☐

Transportation Rates excessive?
Yes ☐ No ☐
State rate.....

Restaurant facilities, if any	☐	☐	☐

State type of food (hot meals, cold meals).....

Time in.....Time out.....

Work started.....

Work finished.....

Check card was completed in detail for each airport where author stopped.

Awaiting service at Whiteman Airpark, near Los Angeles, author stands at nose of FLYING's Luscombe while mechanic talks with friends. Note service rack.

IS G.I. Training

GI flight school at the Bridgeport, Conn., municipal airport is typical of those teaching 81,000 World War II veterans to fly this year.

This year the GI flight training program will cost the Government $125,000,000. Is it worth the money? Writers examine both sides of this controversial subject.

GOOD FOR AVIATION?

YES

Says PHILLIPS J. PECK

International News Service
Washington Correspondent

WITHOUT the GI flight training program, the aviation operating industry would suffer a collapse from which it would take years to recover.

Admittedly, the program now launched on a new year after escaping the economy axe of the last Congress is the focal point of considerable controversy. Some of the criticism against it is well founded, some is exaggerated.

But undeniable is the fact that GI flight training has given a shot in the arm to non-military aviation in the United States. It is helping to keep hundreds of small airports open.

Should these benefits be cancelled because of a few weak spots? Veterans, fixed-base operators, lightplane manufacturers and many others with whom I have talked answer that question with a resounding "no."

The answer is not to ditch the program because parts of it are malconceived or maladministered. Instead, abuses can be corrected, the program improved and the taxpayer (who is paying the freight) can be convinced of the necessity for flight training.

Looming in first importance is the national defense motive for continuation of the program. The writer polled some of the country's top-flight operators and training schools on the merits and demerits of the GI training system. Maxwell W. Balfour, vice-president of Spartan Aircraft Company, hit at basic factors when he insisted:

"Too many persons have forgotten that in 1939 we went through a tremendous ordeal in an effort to build up our air force overnight.

"Another emergency would bring another such crisis if all flying depended solely on the individual's pocketbook. I am not advocating Government subsidy of private flyers, but I do think that at least temporarily this GI program is providing us with a tremendous backlog of material for flying schools, ferrying of aircraft, and freight and passenger hauling that would be of inestimable value in an emergency."

Veterans' Administration officials estimate that approximately 81,000 GIs will enroll for training in the current Federal fiscal year ending June 30, 1948, with Government payments to approved schools again exceeding $125,000,000.

More than 2,100 state-approved schools in the continental United States held contracts with the Veterans Administration last year to give courses in flight training to veterans. The number of GI trainees averaged about 31 per school.

VA officials believe the present flight training program will continue for another six years, although they foresee a gradual decline in number of students, beginning about two years hence. (Under the GI Bill of Rights, an eligible veteran who selects flight training must enroll in a state-approved school within four years after the President declares the war emergency ended.)

Since the GI flight program (*Continued on page* 88)

NO

Says WILLIAM WELSH

Washington Writer
Former Navy Pilot

LAST summer CAA stated bluntly in an official letter that all flying jobs would be filled easily by ex-service pilots. As far back as January, 1946, H. V. Stirling, assistant administrator of the Veterans' Administration, made it a policy to tell GI flight training prospects that job chances were approximately zero.

With taxpayers scheduled to pay $125,000,000 in 1947 for the GI flight program, the question is raised: "Who is benefiting from the expenditure?"

After a survey of the situation and a number of interviews, I believe the answer is emphatic: None of the interested parties—the veteran, the flight school operator, the aviation industry as a whole or John Q. Public, the financier—are obtaining tangible benefits from the program.

As early as 1946, VA district agents were instructed to refuse flight training to disabled veterans applying under Public Law 16, unless a disabled vet could show evidence of a definite flying job after training.

As for P.L. 346, regulating training for the more numerous, uninjured vets who are entitled to one year's schooling if they were released honorably after 90 or more days' service and to additional schooling time equivalent to the time spent in service up to three years, the VA would have been more emphatic in dealing with these men, save for the fact that P.L. 346 does not give VA the right to deny such educational benefits.

By November 1, 1946, more than 67,000 veterans were enrolled in 2,100 flight schools across the nation. This number was, according to a one per cent sample survey made by the VA of over 2,000,000 veterans in all types of training, up to 81,000 on May 1 of this year.

Apparently, then, a good number of veterans must be pushing flying as an avocation rather than a vocation. But not very hard. For flight school operators report that only a small percentage of GI graduates come back after graduation for flight time, and an even smaller number of GIs buy airplanes.

The avocation urge, apparently, goes only as far as the Government's money.

Beyond this, two different elements of the GI training are proving and may prove more distasteful later for the "lucky" GI.

The first is that, unlike Army and Navy pilot candidates during the war, the GI flight student generally is not given pre-flight psychology and motor tests. The CAA does not require a student to pass these tests. Operators, eager for business, naturally do not give them.

The Army and Navy found that by using these tests the psychologists were able to predict within 86 per cent how well a student would do—not only whether he would wash out or succeed, but what performance rating he would have.

A GI, however, takes his training blind. And many who wash out cuss the VA and (*Continued on page* 90)

I Hold the World's Speed Record

By Maj.
MARION E. CARL
U.S.M.C.

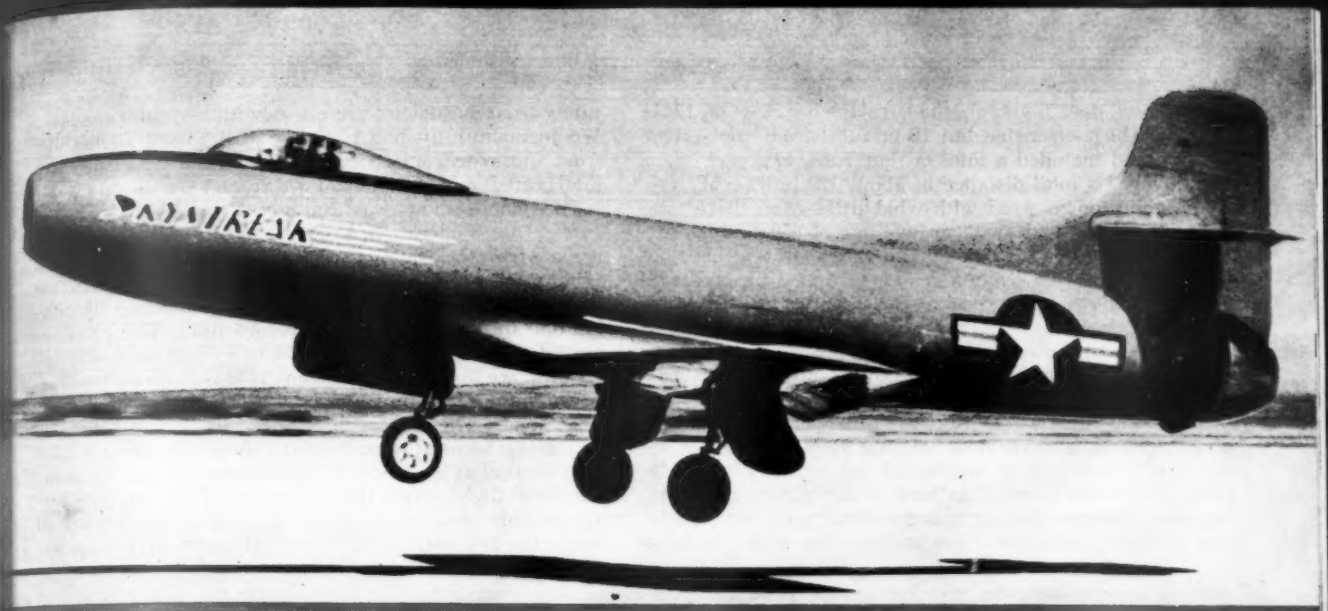
Here is how it felt to set the new world speed record of 650.606 miles per hour.

Author and Skystreak. The tiny canopy was so narrow he could turn his head only about 30°

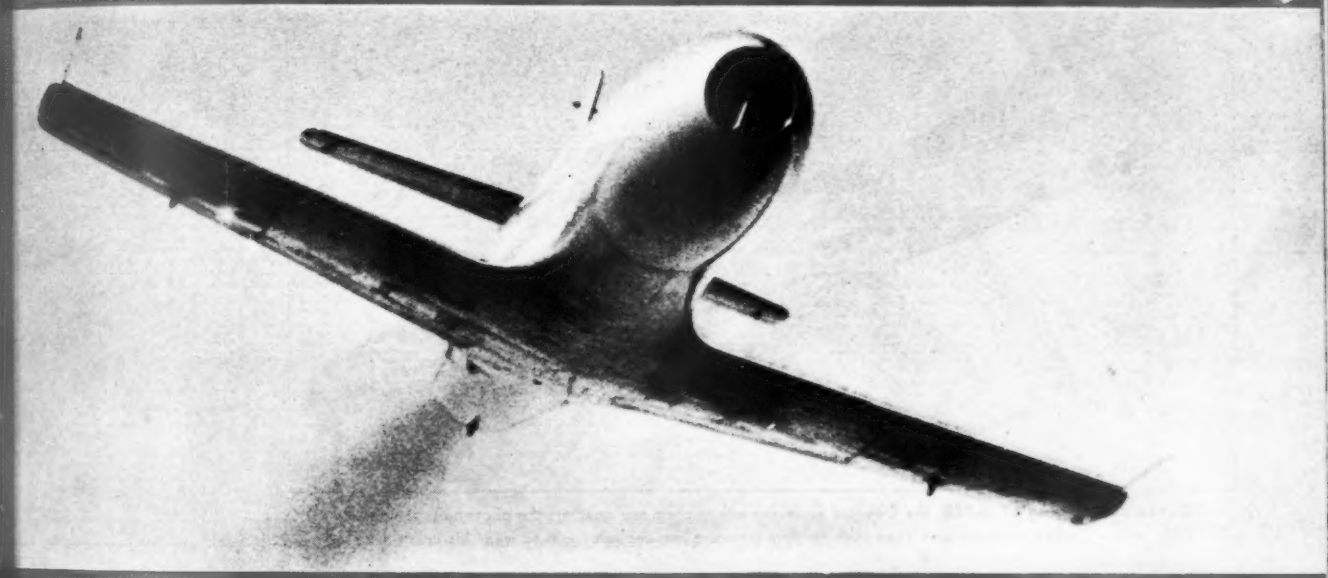
AT PRESENT I hold the world's speed record for the measured three-kilometer course, but it will be only a matter of time—and probably a very short time—before it is again broken. Not only the Army Air Forces but England and other foreign countries have airplanes coming up that should easily exceed the records that were set by Comdr. Turner Caldwell, USN, and myself at Muroc, Calif., in August of this year. We were flying Navy's D-558 built by Douglas Aircraft Company and perhaps better known as the *Skystreak*.

Commander Caldwell made his runs August 20 at 9 a.m. at an outside air temperature of about 78°. He also had a wind varying around 12 m.p.h. quartering the course. While his average of four runs was 640.7 m.p.h., his highest speed on one down-wind run was 653.37 m.p.h. True airspeed for his four runs varied very little. He used full throttle on all of his runs but reported that although he had gotten full 7,700 r.p.m. on take-off this dropped to 7,600 when going across the course at high speed—perhaps due to choking in the air intake ducts, or action of the barometric control. At any rate, because of this condition and weather conditions in general, my flight was postponed for a few days. During these few days the plane was inspected carefully and the governor was set up to allow better than 7,800 on the ground.

My official runs were made August 25. It was virtually an ideal day in that there was almost no wind and the outside air temperature was about 92° F. It had been previously determined that for this engine and airplane the optimum temperature for maximum true airspeed would be about 95° F. Time of take-off was 11:30 a.m. The airplane and engine were the same used by Commander Caldwell. The engine was a regular production job, a General Electric-Allison TG-180 rated at about 4,000 pounds static thrust. This engine had some 15 hours of time on it altogether and had not been replaced since



Skystreak takes off at Muroc on early flight. Plane can land anywhere on surface of dry lake here, an ideal place for test flying.



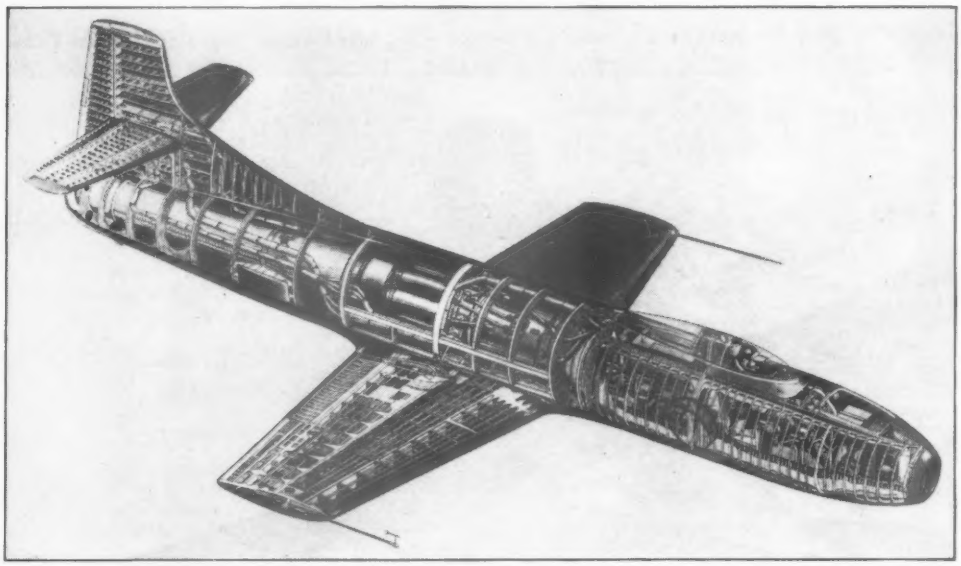
Taxiing was ticklish job because rules forbade plane to exceed 1,310-foot altitude. Below, Skystreak cores same on record run.

the original test flight on the airplane in May of 1947.

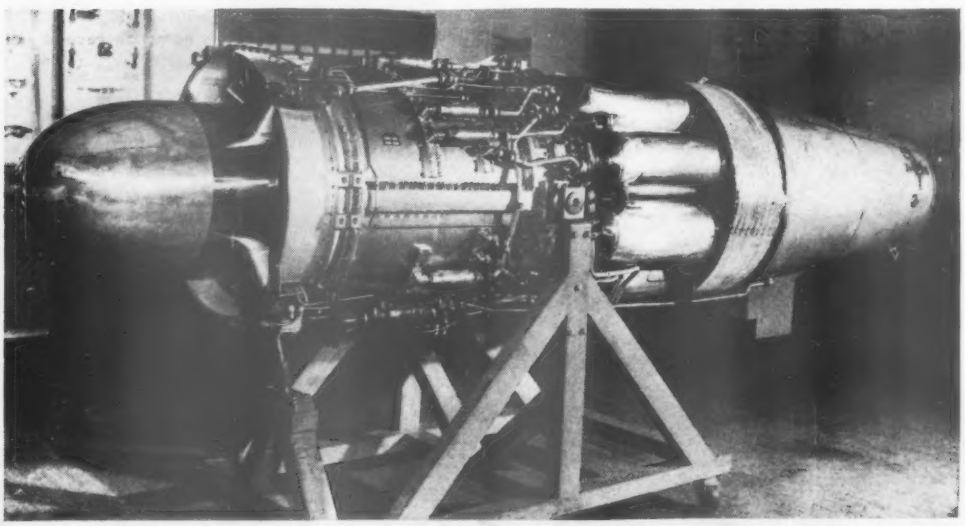
The flight itself lasted but 18 minutes from take-off to landing and included a total of four runs, two each way, and covered a total distance of about 180 miles. My top speed going down wind with what little wind there was came to 652.64 m.p.h. with an average of 650.6 m.p.h. for the four runs. Because the plane was operating high on the drag curve there was a strong tendency for the true airspeed to be exactly the same for each run at full throttle despite the angles of dive used going into the measured part of the course.

I finished my runs with three minutes of fuel left. Actually my only worry on fuel was to have enough to get through the fourth run. I wasn't particularly worried about making a dead stick landing since at that speed the plane would glide power off for perhaps some 15 miles and it was possible to land in any direction on the lake bed. Despite the fact that the plane has a very sensitive air speed indicator there was no way to know definitely what our official speed was until several hours later. We just naturally had to sweat it out until all the film from the synchronized camera had been developed and interpreted, and they took 1,500 frames per second.

The whole show was conducted under international rules of the Federation Aeronautique Internationale represented by the National Aeronautic Association Contest Committee which not only acted as official observer to see that no rules were violated, but also supervised the timing and interpretation of the record film. The rules required that we not exceed 1310 feet from time of take-off until we landed. That meant 1310 feet above the level of the measured course which was three kilometers or 1.86 miles long. The rules also required us to stay below 246 feet going across the measured course, including a 1,500 feet interval at each end. Furthermore, we had to maintain level flight across the course and could not vary any appreciable amount up or down even though we stayed below the 246 feet. (*Continued on page 99*)



Cutaway drawing of D-558, the Douglas Skystreak, shows cramped quarters the pilots have to contend with. Major Carl sat on floor and even then he didn't have quite enough room to wear his crash helmet.



GE axial flow J-35 turbine powers the Skystreak. Streamlined like a torpedo, this jet engine is so compact that it could fit into the wing of a large transport plane, yet it delivers 4,000 pounds of thrust.

JET BOAT

Jet flying boat fighter, built by Saunders-Roe, is powered by two axial flow turbo-jet engines with a static thrust of 3,850 lbs.

WORLD'S fastest flying boat and the first powered by jet engines is the 550-m.p.h. twin-jet Saunders-Roe S.R. A1. The 15,000-lb. four-cannon fighter is the first British aircraft driven by axial flow turbo-jets (two Metropolitan-Vickers F-2/4 engines). Air intakes are combined at the hull's extreme nose with propulsive orifices at sides of the hull, aft of wings. Wing span is 46 ft., length 50 ft., and height 17 ft. Floats are semi-retractable. Early test flights proved that salt spray entering the air intake did little damage to engines, and that the small salt deposits could be washed easily from impeller blades at intervals. The plane is all-metal. END

Tournament in the Clouds

Prue 160, made from P-38 belly tank, is examined before flight by Designer Harold Prue (left).

Awaiting towplanes at Sheppard Field, contestants get gliders in trim for day's flying. Taking off in rotation, the sailplanes usually cleared the field in two hours.

British entry, an Olympia Eon sailplane, begins its flight with the assistance of an English-made, four-place Percival Proctor towplane.

Spot-landing contests were a daily feature of the meet. Idea was to get as close to the flag as possible—without knocking the judge over.

Winner of National Soaring Contest was pilot Richard Comey of Cambridge, Mass.

Giant Texas thermals boost sailplanes to new records at Wichita Falls meet.

PHOTOGRAPHS BY ROSS-PIX

GIANT Texas thermals built up over flat plains boosted sailplanes in the recent National Soaring Contest at Wichita Falls to a combined altitude of 2,551,811 feet. The meet, which left records smashed and strewn all over northern Texas, convinced the 80-odd contestants that Texas winds were the man-sized variety natives claimed. The motorless aircraft boys stayed aloft a total of 1,743 hr., 19 min. and logged 40,921 miles—compared to last year's 6,600 miles at Elmira, N.Y.

Kempes Trager, Detroit, Mich., soared 17,600 feet to win the trophy presented by FLYING to the pilot gaining the greatest altitude. John Robinson, Altadena, Calif., flew 333 miles non-stop for a long-distance soaring record. Sanford, Florida's, Virginia Bennis smashed the U. S. women's distance record with a 94-mile hop, set a women's international altitude gain record with 7,200 feet gained, and made a U. S. women's goal record flight of 52 miles. An international goal and return record (single-place) was set by Paul McCready, New Haven, Conn., who soared 230 miles. Lyle A. Maxey, Detroit, Mich., made a 104-mile flight for a national distance and return (with passenger) record. And Eugart Yerian established a national two-place goal record of 207 miles.

Winners of the contest were Richard Comey, Cambridge, Mass., who took first place; Paul McCready, second; and Ray Parker, Twenty-nine Palms, Calif., third.

Because of the flat terrain, all flights were started by airplane tow. END

FLYING Trophy winner, Kempes Trager (son, left) reached 17,600 feet.

Final check before flight is given oxygen mask by Paul B. McCready, Jr.

International experts chat at meet. Capt. Ralph Barnaby, U.S.N., talks to Lieut. Col. Galkovsky, Russia, and English contestant, Charles Wingfield.

Gadgeteer Dr. Gus Raspet used numerous devices in checking gliding conditions.

French glider champion, Eric Nessler, at left, chats with Raymond Jarlaud, sailplane designer.

Dark horse John Robinson set U.S. record, soaring for 333 miles non-stop.

Pre-test conference is held by Operator Bob Meyer, owner of yellow Ercoupe, with Skyservice's coverall-clad service manager, "Unk" Schaft

DIARY OF AN *Airport Operator*

By ROBERT MEYER

President, Skyservice, Inc., Staten Island Airport, N. Y.

With JERRY LEICHTER

Phone queries pour in daily to airport operator Bob Meyer regarding weather, parts, planes.

PHOTOS BY BARRY KRAMER

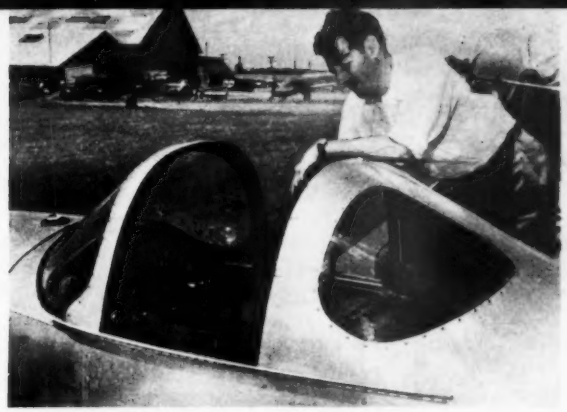
THE TUG-OF-WAR between airport operators and the private pilot must be eliminated if lightplane flying is ever to become part of the average man's daily life. Occasional hangar sessions would have you believe that operators have the instincts of vultures, the habits of coyotes, and the personalities of mules.

Some of this pilot suspicion is justified. It's deserved because of past abuses that are slowly being repudiated along with the men who promoted them. But much of the tirade against operators stems from inability to understand their problems.

This is no time to take out the crying towel, because airports—unless they've been badly mismanaged—aren't on the rocks yet. But there are bad days and good days; and little things can sweeten or sour a normal disposition even on ordinary days.

The crux of the problem is that the pilot who flies for pleasure has to understand the viewpoint of the (*Continued on page* 81)

Checking records of a would-be pilot are Chief Instructor Carm Turrisi and the operations manager, Ed Bennett (right).



Instrument-laden Ercoupe, with everything from giant venturis to a directional gyro, is examined by plaintive Meyer.

Bob Meyer's Skyservice, Inc., is located at Staten Island Airport, near New Springville, 10 miles from New York City.

Flying salesman Meyer (left) takes a few moments from his desk to give prospect pointers before a demonstration flight.

Answering questions is part of any operator's job. Here, Meyer points out Seabee characteristics to his young son, Bob.

Bananas at a cent apiece, parrots for sale in the markets, $20 taxi fares to town—that's what the Sweet brothers found on Caribbean flight.

West Indies Air Cruise

By MONROE H. SWEET

Despite red tape and high customs charges, the Caribbean makes a wonderful recreation area for private pilots.

THE blue waters of the Caribbean are a welcome color after the leaden skies and slushy streets of the north in winter. The contrast is all the more remarkable when you witness it through the windshield of your own plane. Last February 10 my brother Hamilton and I set out from Binghamton, N.Y., for Rio de Janeiro in a Stinson *Voyager 150* to see all this for ourselves. Engine trouble, red tape and excessive expenses dictated an about-face just off Trinidad, British West Indies, but we still had a wonderful time.

We had read the scanty and conflicting articles in popular magazines on South American flying. A letter to Pan American for information brought a friendly but discouraging reply because they thought our plane was too small. However, we learned that February and March is the perfect weather time for the trip—and except for one rain squall we did not experience any "weather" during the 18 days we were over the Caribbean.

One of our best breaks was in meeting Ted Patecell, a Pan American pilot, who had just returned from ferrying a Howard from New York to Rio. His notes covered everything—land- (*Continued on page* 76)

Ready to leave snow country, the Sweet brothers were soon flying in weather so hot it burned NC numbers off top of Stinson's wing.

Second day out, the snow and slush are left far behind. It's lunch time at Jacksonville, Fla. A few hours later they landed in Miami.

Trip planning began in December. Monroe (left) and Hamilton Sweet got their best advice from pilot who had just flown to Brazil.

Final packing involved careful checks of such emergency equipment as tools, sleeping bags, rope, pistol, chocolate bars, parachutes.

San Juan (P.R.) airfield above, and city street scene (right). The field is Navy-controlled and advance permission is necessary to land there. Author slept on grass of airport, since all hotels were filled.

Continued on next page

Red tape was ever-present. Here the author waits before British Consulate at San Juan.

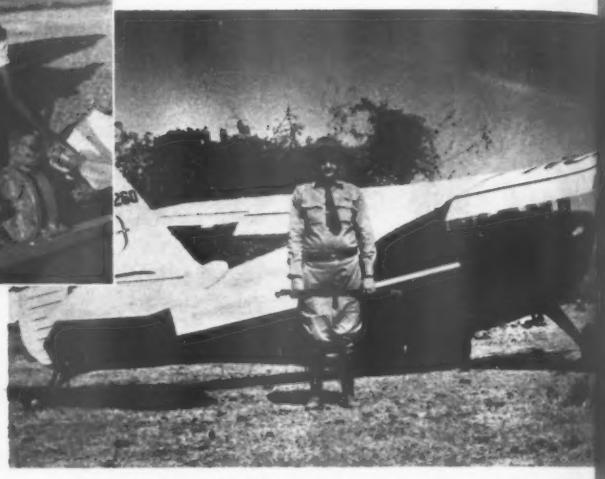
Pery Igel (left), who flew Navion over route, watches GI mechanic work on plane's engine.

Beane Field is Air Forces base on St. Lucia, British West Indies. Landing fee here was $5.

West Indies Air Cruise

Continued

Grenada, British West Indies, had emergency strip where the flyers landed when engine trouble developed. They decided to turn back.



Armed guard protected plane during its stopover at Pepper's landing strip, Jobabo, Cuba. Fuel is pumped from gas barrel (inset).

Jobabo sugar mill was visited by the brothers on return trip. They toured part of the plantation in Art Pepper's private railroad car.

Camaguey in central Cuba was jumping-off point for Miami. Here food and accommodations were better and cheaper than in Havana.

A Research Plan For Private Flying

CAA administrator proposes three ways to develop safer, more economical lightplanes.

Curtiss Tanager won $100,000 Guggenheim safe aircraft competition in late 1920's. Wright suggests new contest to develop a roadable airplane or a flying automobile.

By T. P. WRIGHT

Administrator, Civil Aeronautics Administration

THE people of this country are fundamentally air-minded. They are, in general, sold on flying. Now we must sell them on the personal airplane.

To make this "sale" I believe we must achieve substantial improvement, and that means more research and development.

I suggest a three-pronged research and development program—one which I believe can be justified to Government, to the industry and to certain agencies or individuals not connected with either. The success of this three-way attack on the problem of personal flying—possibly today's most pressing problem in the whole aviation picture—would result in an extremely important industry in this country. That, of course, would mean jobs, new wealth, a healthy contribution to our national economy.

[Last spring the Department of Commerce and the CAA proposed a $5,000,000 developmental program for personal aircraft to be financed by Government funds. The Non-Scheduled Flying Advisory Committee of the CAA approved the proposal. But despite the fact that the manufacturing industry for years has accepted developmental funds for military and transport plane development, and despite the fact that the NACA is concerned almost entirely with pure research rather than development, the Personal Aircraft Council of the Aircraft Industries Association rejected the program on the grounds that it "would duplicate research activities of the NACA."—Ed.]

Let's examine the personal airplane and personal flying before we consider the three fields for development. We have an end product—flying—which appeals to a majority of the people in the United States. The response of the public to the helicopter, with its obvious possibilities for safe and convenient use by a very large segment of the public, was an indication of this.

Our experience in the CAA in answering some 140,000 queries a year proves to us daily that the public is air-minded and interested in this end product which we have to sell. It is a point which does (*Continued on page* 92)

Paddle-bladed prop developed by NACA looks outlandish but is more efficient than conventional propellers and could end aircraft noise problem if adapted commercially. Wright suggests Government subsidies for similar research projects.

A FLYING Holiday

The Florida "Ridge"

Fly to lakes and orchards in subtropics.

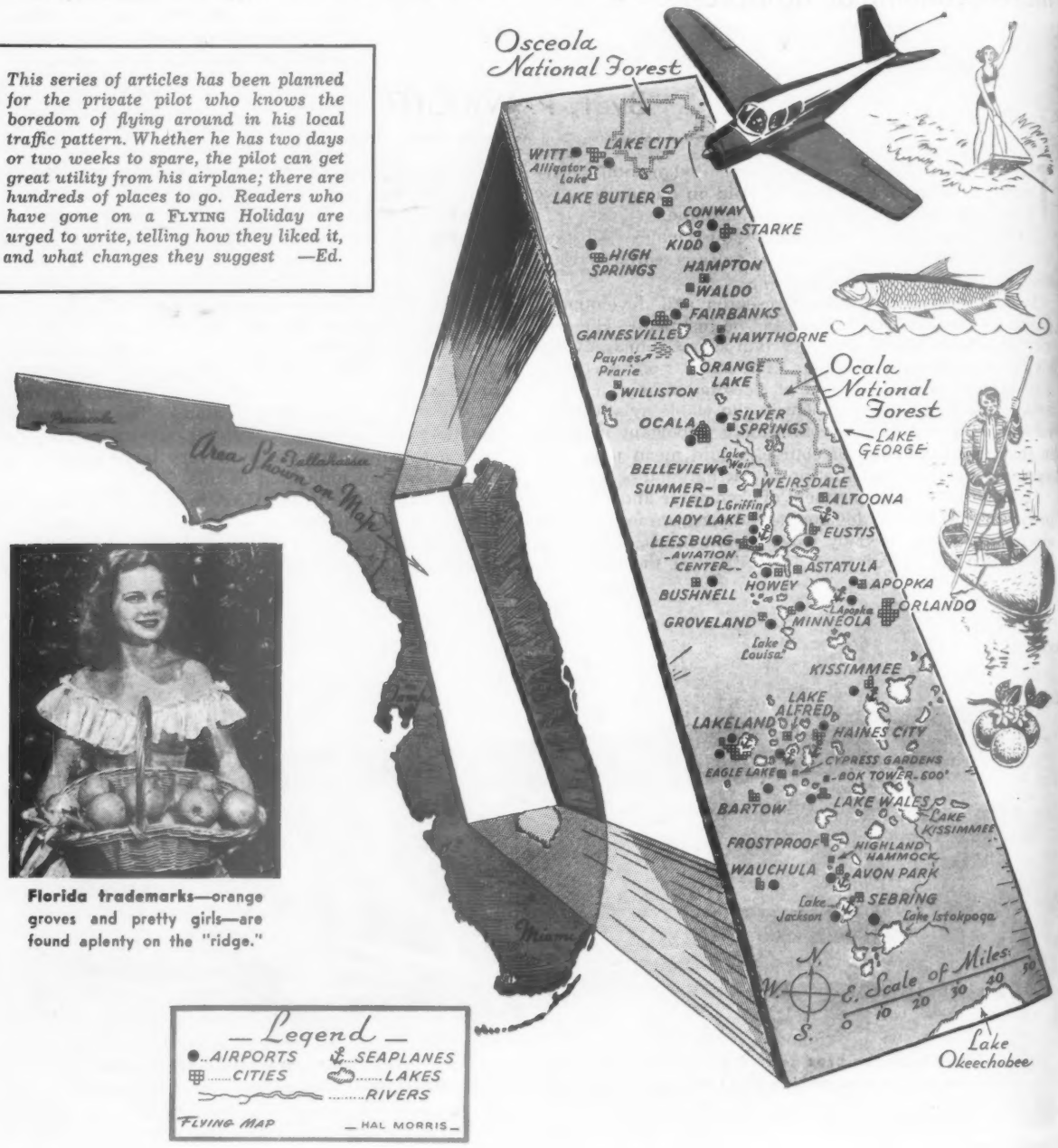
FLYERS planning a vacation in Florida often automatically plan their destination to one of the much-publicized coastal resort cities. By overlooking the inland region, they are apt to miss one of the state's most unique areas—the lake and ridge section which extends from the Georgia line south to the fringes of the Everglades.

Here is a low "ridge" with such diverse attractions as sub-tropical cypress gardens and deep, wonderfully clear springs, year-round sunbathing and swimming, hundreds of lakes with the kind of bass fishing a fellow has to see to believe, scenic attractions, and hunting in pinewoods, prairie, and hammock. North of Lake Okeechobee is the Kissimmee prairie land, covered with grass and palmetto and dotted with hammocks—dense growths of trees and shrubs. There are even cattle ranches here.

"The Ridge," as Floridians call it, is one of the world's great citrus fruit areas. Thousands of acres of orchards extend for miles over the slightly rolling sand hills.

Most of the cities and towns are small and have convenient airports, thanks to an abundance of open land. Hotels and tourist accommodations as a rule are not done in the grand manner, both as to (*Continued on page 68*)

This series of articles has been planned for the private pilot who knows the boredom of flying around in his local traffic pattern. Whether he has two days or two weeks to spare, the pilot can get great utility from his airplane; there are hundreds of places to go. Readers who have gone on a FLYING *Holiday are urged to write, telling how they liked it, and what changes they suggest —Ed.*

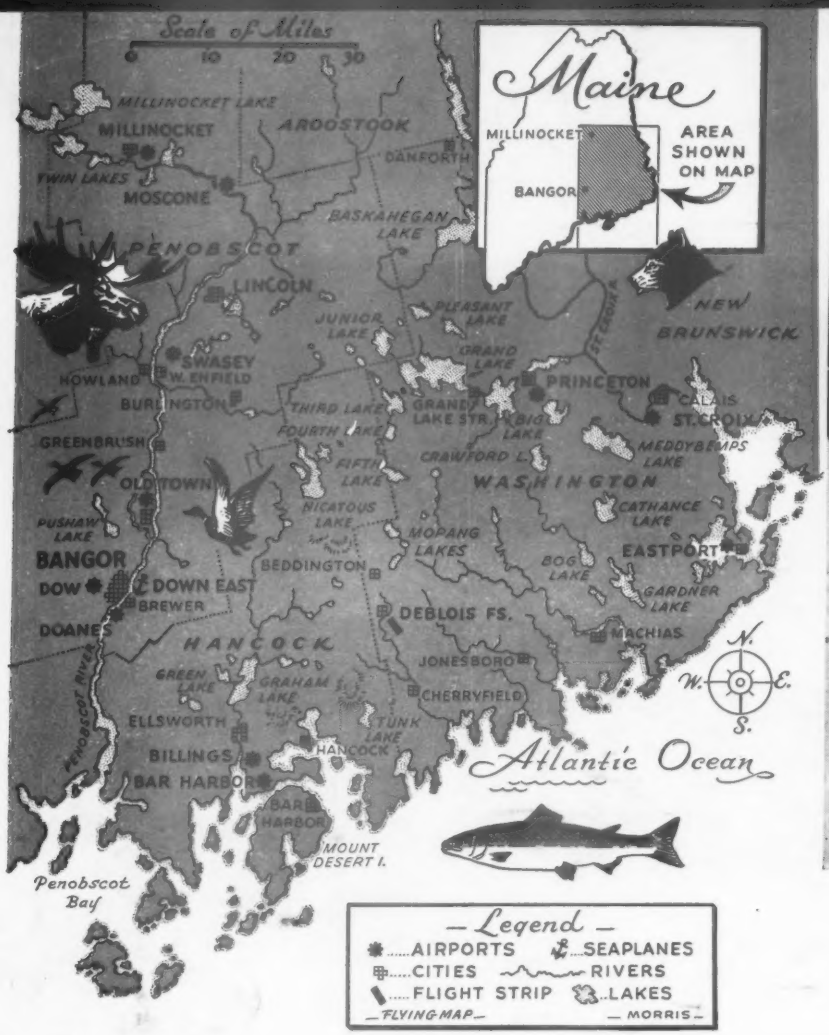


Florida trademarks—orange groves and pretty girls—are found aplenty on the "ridge."

Water skiing and aquaplaning are popular sports on central Florida's chain of inland lakes. There are also numerous seaplane bases scattered down length of Florida's ridge and lake section.

Leesburg Aviation Center has two 1,500-foot paved runways, plus sodded end strips. There are seaplane beaching facilities here, too.

Eight seaplane bases along Florida's "ridge" are supplemented by hundreds of lakes available for landings.



Eastern Maine

A FLYING Holiday

The flying sportsman will find game aplenty in Maine's isolated forests.

HUNTING in Maine's wild and remote regions is simple for the lightplane pilot—and some of the best Maine hunting country is bounded by a circle of convenient airports. Southeastern Maine, including Washington and Hancock counties and parts of Penobscot and Aroostook counties—though largely unbroken by roads and sparsely settled—is circled by a dozen airports.

This region offers, in late November and December, both waterfowl and big- and small-game hunting. The rugged Atlantic coast is good duck and goose country, and inland Virginia deer and black bear abound—not to speak of wildcat, fox, rabbit, coon, and other animals.

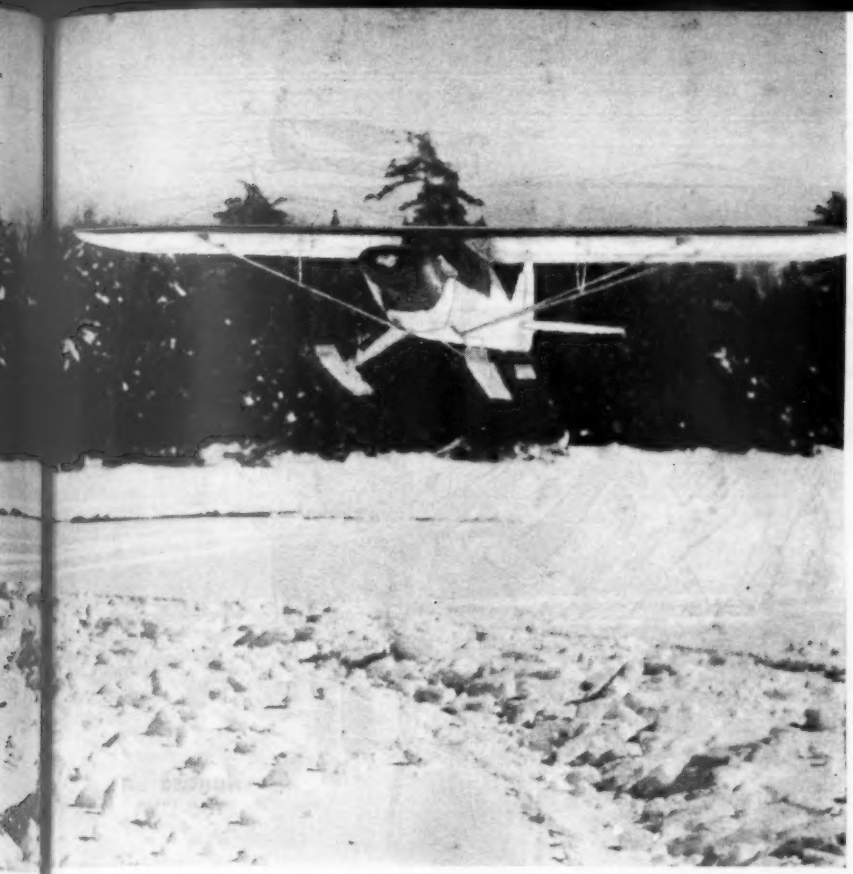
It must be admitted that, in general, the country's game supply is dwindling. Whether the cause is too much hunting pressure or inadequate breeding and feed areas is a matter of dispute. But latest reports from the wardens of Maine's Inland Games and Fisheries Department indicate that the outlook for this year's hunting season is good. During the summer the wardens have been observing the game supply and on the basis of their reports the situation in the four counties mentioned is:

WASHINGTON COUNTY: Produced more deer last year than any other county and hunting will be good again this year.

HANCOCK COUNTY: Deer are reported plentiful and prospects for bear hunting are bright.

AROOSTOOK COUNTY: Deer population on the upswing and bear plentiful.

(*Continued on page* 85)



Using skis, flyers can land on open clearings after a heavy snowfall. First snow deep enough to allow use of skis usually falls between December 20 and January 1.

Ice-fishing on windswept lakes is a favorite sport; fishermen need thick winter clothes.

After day's hunting, the sportsman's job is not done. Hunter cleans ducks at night.

Deer hunters find plenty of animals, but state regulations are strict. Deer tags must be filled out and attached to each carcass. The season limit is one deer.

Decoys are set up to lure geese in range of hunters' firearms. Limit is four per day.

HUNGER ON THE LINE

BREAKFAST FLIGHT

WEATHER VIGIL

RED HOT INDIVIDUALIST

FASHION PLATE

THE DEMONSTRATION

ILLUSTRATED BY
FRANK ADAMS

AT first glance the breakfast flight seems like a slightly mad affair when Frank Adams puts his keen eye and facile pen to sketching it. But on second thought, the confirmed breakfast flyer realizes that this is exactly the way breakfast flights are. There's always the "babe" all togged out and suitably accentuated—and always with some pilot paying her eager court. There's the unpredictable weather, the unsociable lone duck, the occasional food shortage because too many flyers showed up. Frank Adams' breakfast flyers become as real as those in the actual flight itself.

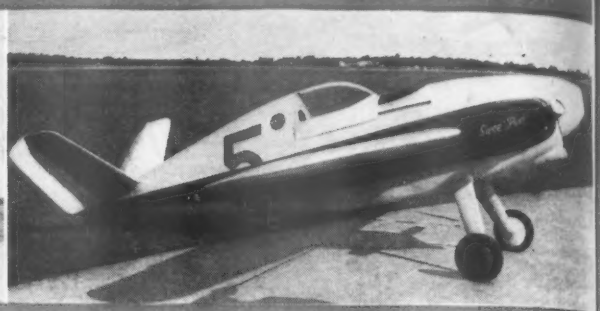
PREFLIGHT TRAINING

LAST MINUTE CHECK

PATIENT PILOT

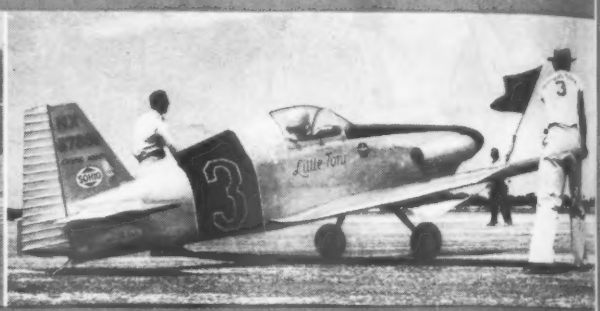
PRIZE PIGMIES

BUSTER



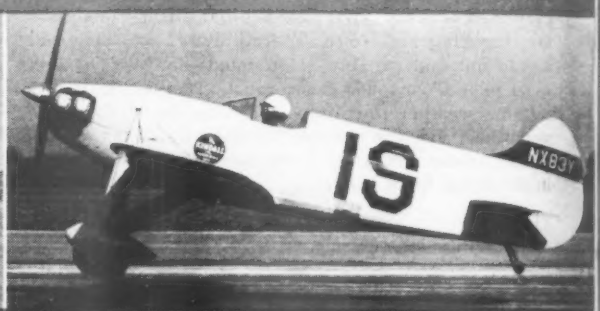
SWEE' PEA

LITTLE MINNOW

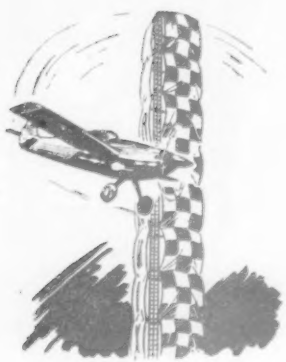


LITTLE TONI

LOOSE SPECIAL



BROWN (MODIFIED)



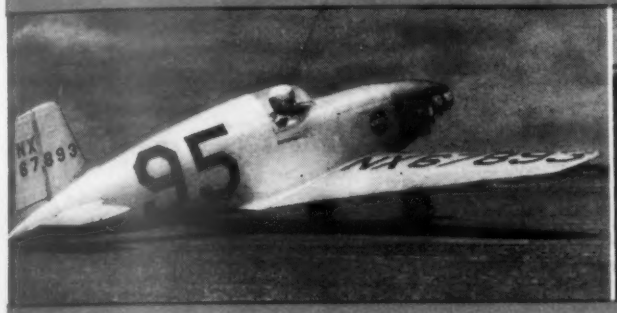
THE 12 sleek little airplanes on these pages won all the prize money in the $25,000 Goodyear Trophy Race at this year's National Air Races. Flying a roughly rectangular course approximately two miles long in full view of the grandstands, the fastest heat was flown by William Brennand in *Buster,* a Steve Wittman Special airplane, which also won first prize money. *Buster's* fastest heat was 165.857 m.p.h.—mighty fast for a plane powered with an 85-h.p. engine.

The money winners, and the specifications of their planes, are shown on the adjoining page. These are the modern version of yesterday's home-built airplanes. They are fast, with high landing and stalling speeds, and all are purely NX. Without exception the racers are small single-place monoplanes powered with 85-h.p. Continental engines. They vary in empty weight from 494 to 650 pounds, in span from 16 feet to 21 feet, and in maximum speed from 145 to 197 m.p.h. Their materials are fabric over steel tubing, wood, and metal. (*Continued on page* 87)

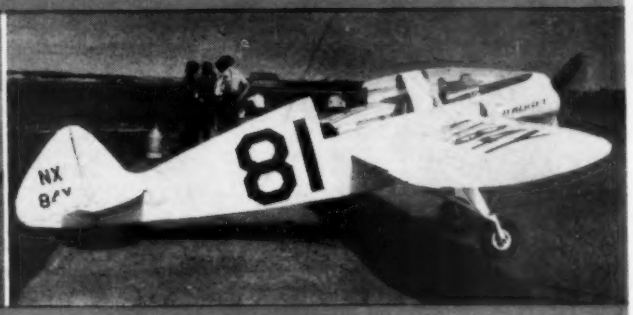
Goodyear Trophy winners pack speed in small packages

JEEP

FLITEWAYS SPECIAL

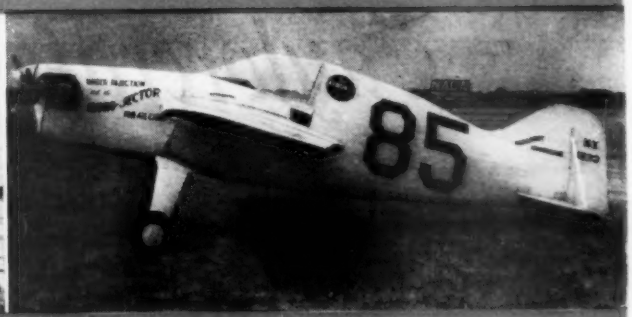


CALIFORNIAN



FRANCIS-ANGELL SPECIAL

DEER FLY I



HURLBURT HURRICANE

Plane Name	Entrant	Pilot	Fastest Heat (m.p.h.)	Prize Money	Propeller	Span	Length	Gross Wt. (lbs.)	Empty Wt. (lbs.)	Wing Loading 16/sq. ft.	Maximum Speed (m.p.h.)	Stalling Speed (m.p.h.)	Range (miles)	Rate of Climb (f.p.m.)
Buster	Steve Wittman	William Brennand	165.857	$8,500		16′	17′	790	500	11.8	197	60	450	1,500
Swee' Pea	Air Race Corp.	Paul Penrose	165.393	4,850	McCauley	18′6″	15′7″	880	590	12.3	196			
Little Minnow	LeVier & Assoc.	Herman Salmon	159.109	2,900	Sensenich	19′6″	17′	840	550	12.0	180	70	400	1,500
Little Toni	LeVier & Assoc.	Tony LeVier	157.851	2,760	Sensenich	19′6″	16′	800	515	12.0	185	62	300	2,100
Loose Special	Chester Loose	Warren Siem	154.020	1,700	McCauley	19′	15′	800	530	11.0		80	3 hr.	2,000
Brown-Modified	B. F. Robinson	B. F. Robinson	144.185	1,060	Fritsen	18′9″	16′	765	530	11.8	185	70	500	
Jeep	W. F. Folck	William F. Folck	142.519	1,050	McCauley	18′7½″	16′11″	805	516	12.0	175	70	400	800
Fliteways Special	Fliteways, Inc.	Chas. W. Bing	141.052	890	Hartzell	19′	14′6″	745	494	11.6	185	55	350	1,300
Californian	E. F. Allenbaugh	Dwight Dempster	143.430	750	Fritsen	18′	19′	855	555	11.8		65-70		
Francis-Angell Spec.	Francis-Angell	Bill Taylor	134.351	200	Sensenich	21′	18′	720	495	11.8	145	60		1,100
Deer Fly I	Rodney Nimmo	Mike Argandar	132.302	135	Sensenich	19′6″	15′6″	800	650	12.0	180	70	200	1,200
Hurlburt Hurricane	Caldwell-Logan	Joe Smith	129.280	100	Flottorp	16′6″	17.0	780	550	14+	170	50		

Standard Model 47 does not have wheel mudguards. Author averaged 86 m.p.h. on cross-country flight, using 4½ gallons of fuel per hour. Equipment includes six instruments, cabin heater, brakes and steerable tail wheel. Price at factory is $2,345.

THE *Taylorcraft Model 47*

FLYING's CHECK PILOT

EDITOR'S NOTE

This series of articles is planned to help the pilot and prospective plane owner evaluate aircraft now on the market. Only aircraft holding a CAA Approved Type Certificate are flown. The author is not a professional test pilot. He evaluates each aircraft through the eyes of an average private pilot who flies an airplane either for business or sport.

AFTER a stormy period in which the reputation of Taylorcraft hit an all-time low, C. G. Taylor—"father" of the lightplane and designer of the original *Cub*—has moved back into the company bearing his name. With all the Taylorcraft distributors and dealers as part owners of the company, C. G. is once again directing this old-time lightplane company, and things have improved greatly.

Under the new setup, Taylorcraft, Inc., is producing just this one type, the Model 47. Plans are under way for the production of a low-priced four-place lightplane; the four-placer developed by the preceding Taylorcraft management has been abandoned.

The Model 47 is a pleasant lightplane to fly. It is very much like the similar models which preceded it, although it has been cleaned up considerably, and is somewhat quieter. For all-around economy and good cross-country performance, this is one of the better lightplanes. Its 65-h.p. Continental burns only 4½ gallons per hour, but the ship cruises at about 90 m.p.h. and has nearly four hours of range (about 360 miles, if you want to use every last drop of the 18 gallons).

When I flew the demonstrator of Taylorcraft's Chicago distributor-owner, Feris Flying Service, Hinsdale, Ill., there was just a light surface wind blowing. With a passenger and heavy brief case (*Continued on page* 95)

Visibility in the air could be improved by adding an overhead window, a feature that would greatly aid the pilot flying in an airport traffic pattern. Model 47 is a conventional, easy-to-fly lightplane, can get into the smallest clear areas.

Two persons and small amount of baggage are carried in side-by-side cabin. Range: 380 miles.

REPORT FROM WASHINGTON

By FRED HAMLIN

ONE of our best sources informs us that there will never be another Douglas 558, the sensational *Skystreak,* world speed record holder. Ed Heinemann, Douglas El Segundo's chief engineer, says that the *Skystreak,* far from being a production airplane, is a sort of flying laboratory, a medium by which Douglas engineering will learn more about various wing foils and fuselage designs. Douglas is pinning future hopes on a "supersonic" speed job so bizarre that, we're told, "it looks like something out of a Flash Gordon comic strip."

Jet "Prop" Peril

Speaking of jets, tragic discovery was made recently at Muroc Army Air Base that it is just as dangerous to get near the nose of a jet as to fool around the front end of a turning propeller. The deadly lesson came one day not long ago when a mechanic was sucked into the nose intake duct of the North American XP-86. Eye witnesses said that the victim accidentally stumbled when about three feet away from the revved-up jet plane. His head struck the plane's nose. Apparently momentarily stunned, he was pulled into the nose by suction and died of a crushed chest and suffocation.

Streamlining

Its own boss at long last, the Air Force has made great strides in recent weeks to streamline its organization as thoroughly as it has streamlined its planes. Air staff reorganization has reduced from 13 to eight the number of staff chiefs reporting directly to Gen. Carl Spaatz, the chief of staff. Vice chief of staff is now Gen. Hoyt S. Vandenberg. Helping him is Lieut. Gen. Lauris Norstad, now deputy chief of staff for operations of the Air Force. Two of top AF officers are now in command in far places. Both became famous during the war as bombing experts. Lieut. Gen. Nathan F. Twining, whose men dropped the atomic bombs on Japan, is top kick in Alaska. Lieut. Gen. Curtis E. LeMay, the innovator of formation-pattern bombing and an expert in both the European and Pacific theaters during the war, is commanding all U.S. air forces in Europe.

Scuttlebutt

It's a false rumor that the Air Force has ordered an indefinite stop to all work on the Boeing *Stratocruiser,* a model that airlines are waiting impatiently to introduce to the customers. AF sources at the Pentagon say that the *Stratocruiser* project still has a green light, and word from Boeing at Seattle would seem to confirm this. The big plane, its builders report, is doing all right, thank you. Most recent performance was a shallow dive from 12,000 feet during which the plane made approximately 406 m.p.h. true air speed. The dive was one of a number made as part of the extensive propeller vibration testing program.... The first *Strato* is sailing smoothly toward its 100th hour in the air and the second is going along fine. Both will be used for testing. The plane, powered, with four 3500-h.p. Pratt & Whitney *Wasp Majors,* is clocked to cruise at 340 m.p.h. A total of 55 have been ordered by six major airlines and the word is that the orders still stand. The plane will weigh 67½ tons and be a double-decker.

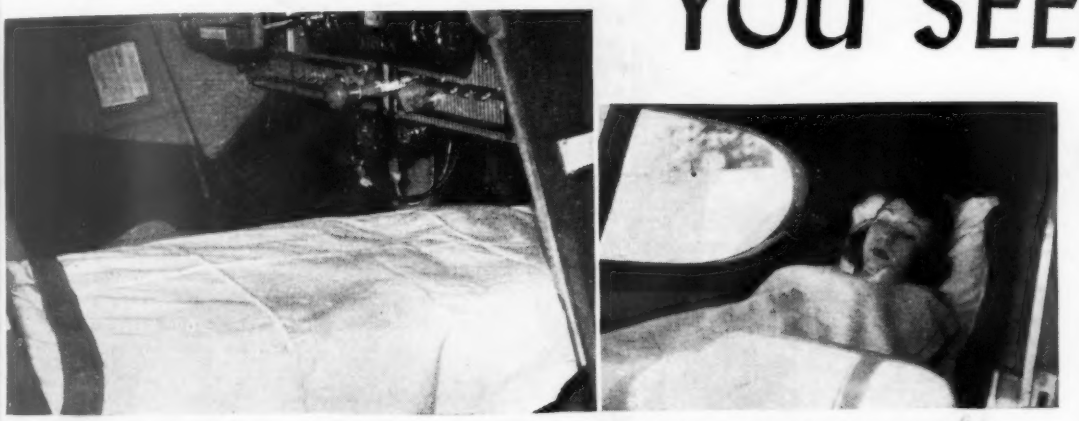
Work on Boeing Stratocruiser is going ahead full speed, say Air Force spokesmen. The big plane is being tested extensively.

Revolution

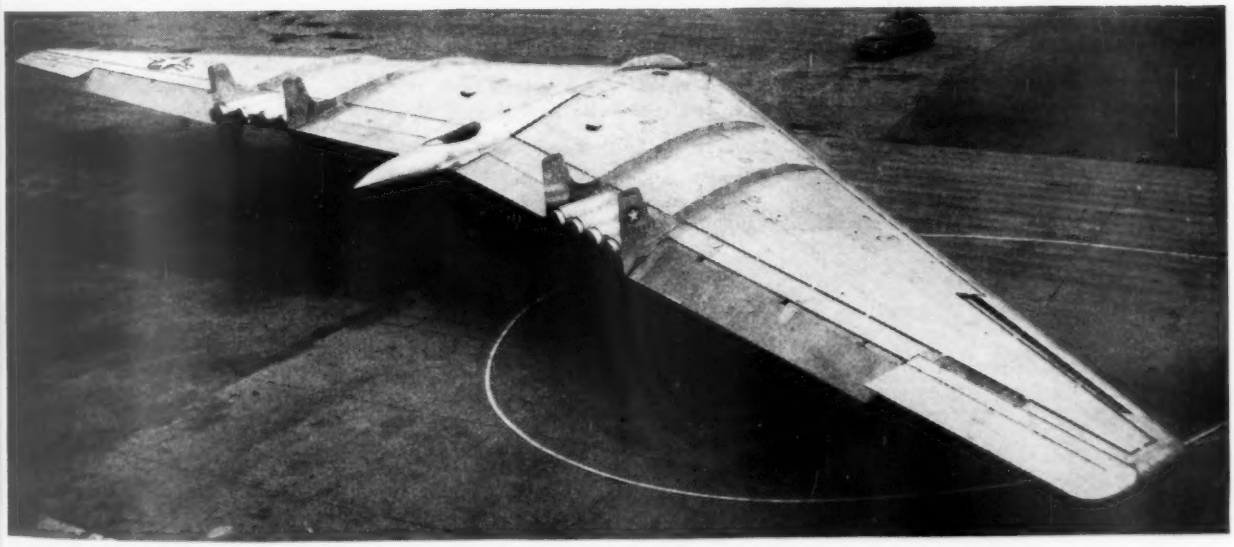
Even more significant, perhaps, so far as the general public is concerned, is what the Air Force has done with its public relations set-up. Favoring an idea that originated some time ago in the mind of Secretary of the Air Force W. Stuart Symington, AF has taken a revolutionary step in military public relations. Passing by all its top officers, it has appointed Stephen (*Continued on page 97*)

HAVE YOU SEEN?

Dead-stick leapfrog, part of an air show act done by Carl Crawford of Sweetwater, Tex., involves jumping an Aeronca Champion over parked car. Plane's forward speed is from glide.



Stinson ambulance conversion, developed by Mountain States Aviation of Denver, Colo., has been approved by CAA. Company is making conversion kits with which Voyager can be converted in five minutes. Stretcher is 6 ft. 8 in.

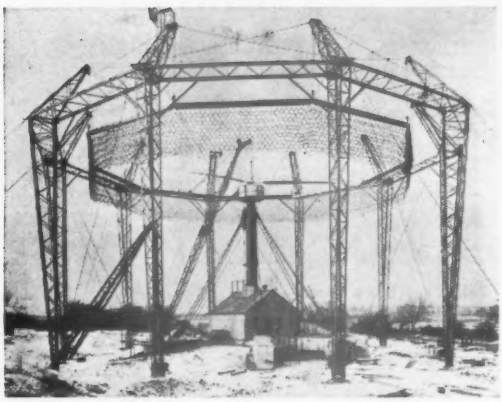


Eight-jet flying wing Northrop bomber recently made first flight. Contracted for in 1942, the YB-49 has 172-foot span, weighs 88,100 pounds empty. The engines develop a total of 32,000 h.p. Fully loaded, with 13 crewmen, it weighs 100 tons.

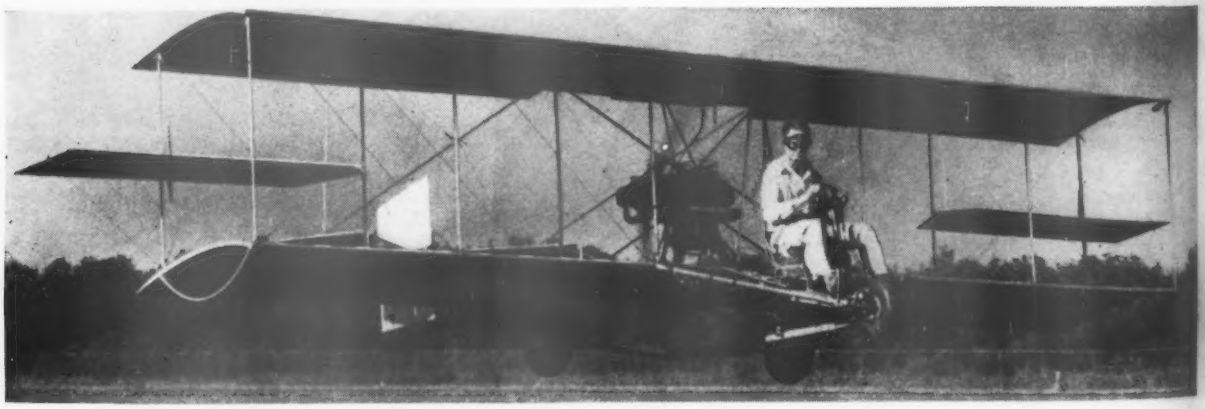
HAVE YOU SEEN?

Continued

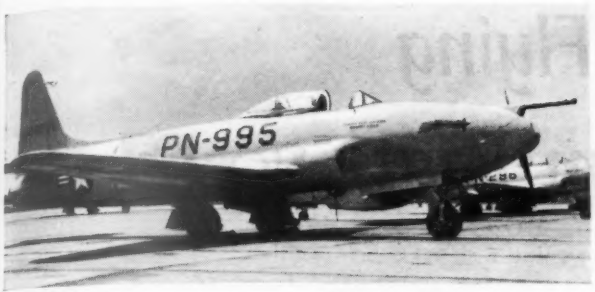
North American XP-86 jet fighter has swept-back 37-foot wing and equivalent of 4,000 h.p. It is all-metal, has a pressurized cockpit and pilot-ejection seat. Speed is over 600 m.p.h., range is over 1,000 miles. Both wing and tail are swept back 35° and are extremely thin.



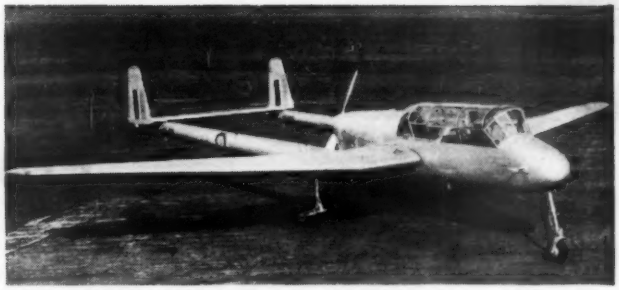
Rotor-spinning tower in England tests limits of helicopter rotors, uses an electric motor of 1,000 h.p.



Old Curtiss pusher rebuilt by Walter Bullock, Minneapolis airline pilot, has 65 h.p. Continental engine. Wing span is 26 feet, gross weight 1,100 pounds. Top speed is 65 m.p.h., cruising 55, stalling 38. Range is 200 miles, climb about 300 f.p.m.



P-80 "glider" being tested at Wright Field has tow-bar in the nose so that it can be towed by B-29. This would increase range.



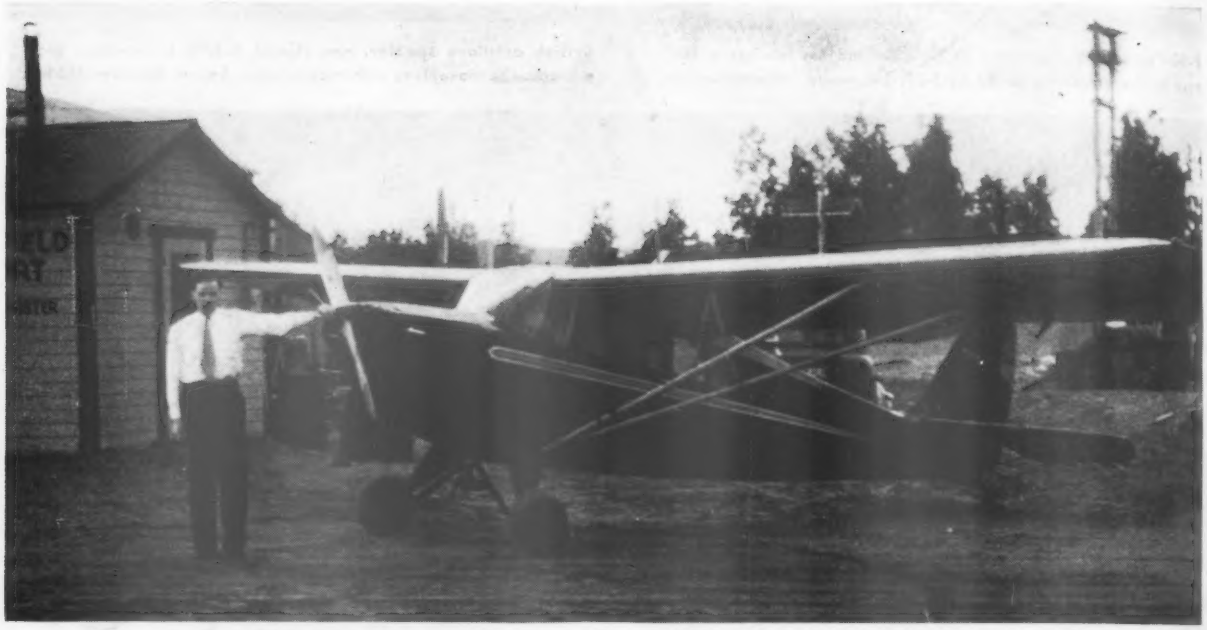
British artillery spotter, new Heston A-2/45 is two-place high-performance monoplane with tricycle gear. Engine develops 240 h.p.

Boeing Stratojet (XB-47), radical new six-jet bomber, now is undergoing tests. It has swept-back 116-foot wing, bicycle landing gear, small outrigger wheels. Its crew of three has ejection seats. XB-47 is equipped for rocket-assisted take-offs.

Fairey Gyrodyne, new British helicopter, seats four people, has one conventional propeller, overhead rotor, but no tail rotor.

Ercoupe landing lights developed by Fort Worth company mount on landing gear, use 12-volt sealed-beam units, do not slow airplane.

I Learned About Flying From That! NO. 97



Author's Aeronca Chief was cruising in sub-zero weather when make-shift patch tore off and wind ripped fabric from fuselage.

By JOHN W. CLARK

Ice glues fuselage fabric to Alaskan's damaged plane.

ICE is a spectre that haunts most airmen. But not all kinds of ice. I'll take frozen water on my fuselage—and like it.

In fact, you might say that ice once kept my plane in the air.

I was flying a 1941 Aeronca *Chief* and had cleared from Fairbanks to Nome, Alaska, via Galena—which was then an Army air base. Previously the plane had been in a hangar at Anchorage, where the weather was about 30° below zero. After arriving in Fairbanks from Anchorage, I found that the contrast in temperature between the warm hangar and cold outside air had caused the fabric to crack on top of the fuselage near the top of the windshield. Hangar facilities were not available then in Fairbanks, and as the crack was only about five inches long, I cut a hole in the fabric about five inches round. Instead of using dope to secure the patch, an impossibility in the sub-zero temperature, I used an old Alaskan trick of freezing the patch on by wetting the fabric. Subsequently, every time I made a flight I checked the patch and the weather carefully to see that the temperature aloft was not high enough to melt the ice. On this particular trip, I checked the patch before leaving Fairbanks and it was frozen tightly. Temperature aloft was reported below freezing so I took off.

About two hours out of Fairbanks I was flying at 6,000 feet when suddenly I heard a loud "whack" and, though I couldn't see, I assumed that the patch had come off. That didn't bother me much, as often on landings and take-offs with skis, large holes are torn in the fuselage fabric. But about two minutes later there was a loud ripping sound and the cockpit was flooded with a rush of freezing air. At the same time the plane nosed into a vertical dive towards the ground. I immediately called Tanana radio, advising them the plane was apparently out of control and asking them to stand by for an emergency. That was all I had time to do. I tried to bring the plane up, out of its dive, but it would only nose up about 30°, then fall off on one wing and go back into a steep vertical spiral. After losing about 1,500 feet, I felt certain that we were going to hit the ground nose on; and I also had decided by that time that the prop wash had swept into the hole where the patch came off, and had stripped the fabric off the entire fuselage. The fabric was draped on the tail surfaces and rudder. Since a bad crash seemed inevitable, I thought I might as well give the plane full throttle, dive and see if I couldn't yank the fabric off in that manner. I'd dive with full throttle and get the airspeed up to 175 or 180, then pull the nose up sharply. How the wings on that little Aeronca ever stayed on, I'll never understand. But they did, and it seemed that every time I'd bring the nose up, it came up a little (*Continued on page 96*)

PLUS PROFITS OUT OF SPACE

Illustrated below is a new type Aviation Products Department for airport operators. It consists of well-designed wall fixtures and showcase, constructed of good quality materials and finished in high-grade enamel—planned to display "plus profit" merchandise to attract customers and make it easy for them to buy. All merchandise, except tires, is under glass too—and the sliding doors can be locked if desired.

Extra fixtures are available so that your department can be expanded at a later date as the plus profits build up. (Fixtures are carried in stock and available for immediate shipment.)

Take action now for your "Plus Profits Out of Space." Contact your Goodyear distributor or write The Goodyear Tire & Rubber Company, Inc., Aviation Products Division, Akron 16, Ohio.

MORE AIRCRAFT LAND ON GOODYEAR TIRES THAN ON ANY OTHER KIND

GOODYEAR AVIATION PRODUCTS

AOPA NEWS

Aircraft Owners and Pilots Association is a service organization for the private pilot or aircraft owner. AOPA's full time staff is devoted to helping the individual pilot. Its aim is: "To make flying more useful, less expensive, safer and more fun." Headquarters are: 15th and New York Aves., Washington 5, D. C. Members also receive a special AOPA edition of FLYING, news-letters and confidential aviation data. Opinions expressed in this column are not necessarily those of FLYING Magazine.

OUTSTANDING example of a city's attempts to "promote air travel" comes from Atlantic City, N. J.

City fathers, in an attempt to regulate flying over Atlantic City, have drafted an ordinance to govern the municipal airport. Parts of the proposed ordinance merely duplicate CAA regulations, and other portions fail to conform to Federal rules of the air.

AOPA objected to the ordinance because it discriminates against the private pilot. When asked if private aviation interests were represented on Atlantic City's Airport Advisory Council, Mayor Joseph Altman answered concisely: "No."

AOPA member Maurice J. Ojerkis, working with AOPA counselors, Air Force Association airport committee and CAA representatives, reports the ordinance is "inadequate, prohibitive to private flying and defiant of CAA regulations."

Sample provisions are:

"Section 6. No person shall be permitted to operate an aircraft from the airport without a permit from the Mayor . . ."

"Section 18: Visiting pilots shall obtain a permit from the Mayor . . . prior to engaging in local flying of any kind."

"Section 19. . . . (if the ordinance is violated) the Mayor . . . [may] . . . bar a person committing such violation from the use of the airport *without a hearing*, if in his judgment such action is justified." The Atlantic City port has been removed from AOPA's "above average" airport listing.

THREE NEW UNITS

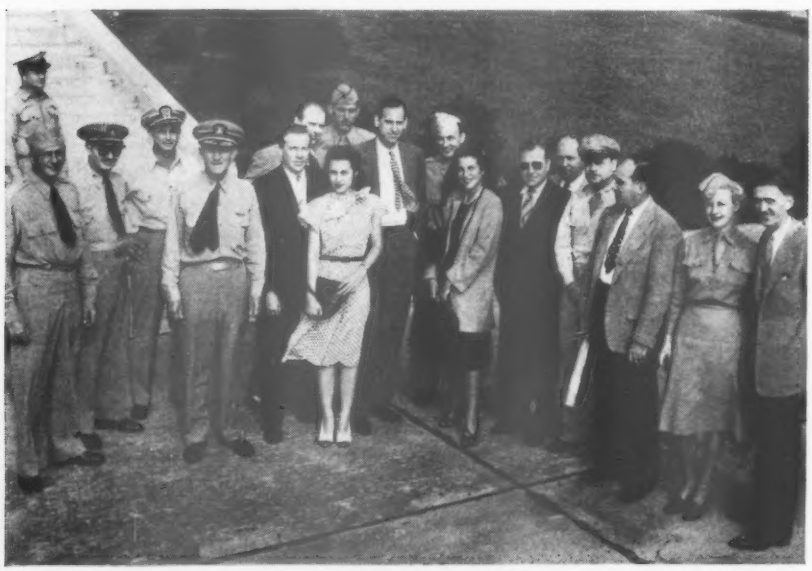
Three new AOPA units have been organized in Endicott, N. Y., Sterling, Ill., and Fresno, Calif.

Officers of the Endicott flying club are president, Richard Ludwig; vice-president, L. A. Greswald; and secretary-treasurer, Alton Corneby.

Sterling, Ill., pilots organized the Rock River AOPA Unit. Secretary Elmer E. McNinch, 805 Avenue A, Rock Falls, Ill., reports the unit meets the first Tuesday of each month and all pilots are invited to attend meetings.

Other officers are H. V. Pittenger, 22734, chairman; Leonard W. Michel, 36735, vice-chairman; Jack H. Appenzeller, 26776, and Ward B. Manchester, 35579, executive committee.

Fresno's officers are Chairman Roy C. Walker, 11309; Vice-chairman, R. L. Bruce, and Secretary-treasurer Joseph H. Buckle, 15154. Meetings are held the second Tuesday of each month.



At Patuxent meeting of Air Space Subcommittee, AOPA's assistant general manager Lloyd R. Wilson, Jr. (fifth from left), opposed Navy request for a 2,500 sq. mi. Maryland danger area. AOPA represented private flying interests at the Patuxent conferences.

SAFETY NEWS

CAB recently advised AOPA officials that pilots may obtain special safety bulletins and releases if their names are submitted for the CAB mailing list. To receive this down-to-earth safety data, write to the Civil Aeronautics Board, Publication Section, B-25, Washington 25, D. C.

SANDBAGGING

AOPA opposes what it terms "official sandbagging"—letters from CAA advising a pilot he is subject to $1,000 fine for CAR violation, and that he may settle in two ways—court action or compromise penalty in a stated amount less than $1,000.

Prize case reported to AOPA concerns a pilot who received from the Moline, Ill., weather bureau, CFR flight clearance to St. Louis. Arriving in St. Louis he found a 1,500-foot ceiling and six-mile visibility. Despite radio difficulty, he contacted the tower and received permission to land at the field.

Two weeks later he received a letter advising him he was subject to a $1,000 fine (which could be compromised for $100) because he had landed at St. Louis municipal airport under instrument weather conditions without filing a flight plan, without obtaining traffic clearance, and without an instrument rating.

The pilot immediately replied, explaining his actions and the CFR clearance. Six weeks later the CAA answered, giving him one week to pay his $100 fine or "we must refer this matter to the Department of Justice for further action."

AOPA objects to this practice because (1) it is costly for an innocent pilot to defend himself and (2) if an innocent pilot forfeits the compromise sum he admits guilt and his record contains an unfair violation.

EAST COAST FLIGHTS

AOPA's fall flights to Rehoboth Beach, Del., and Morgantown, Md., drew a total of almost 400 aircraft.

Approximately 280 aircraft and 550 persons, representing 12 states, joined the Summer Round-Up week-end flight to Delaware on September 13. Two weeks later Morgantown, Maryland's, small flight strip was lined with 87 AOPA aircraft from distances as far west as Illinois.

Both flights were conducted without an accident.

AIR POLICY

President's Air Policy Commission has requested AOPA to furnish specific information and recommendations regarding Federal regulations which are unnecessarily burdensome and restrictive to private flying. The Commission also asked for an estimate of the cost to the Government for a proposed nationwide installation of GCA equipment which would be adequate to meet the needs of private aviation.

The request followed testimony by J. B. Hartranft, Jr., AOPA general manager, before the Presidential commission.

Plan a Flight Anywhere—

You're always within Cruising Range of Famous Flying Red Horse Products!

Over 1000 airports across the country now display the well-known Red Horse Shield—your assurance of Friendly Service, uniformly high-quality lubricants and fuels.

For double-barreled engine protection—*Mobiloil Aero.* This special aviation oil does two vital jobs: —(1) thoroughly lubricates fast-moving parts, (2) carries away heat to keep your engine cool-running.

For Flying Horsepower engine performance—*80 octane Mobilgas Aircraft.* It's a clear gasoline especially designed for personal planes...made by Socony-Vacuum—suppliers of 20% of all aviation fuel.

And soon these famous products will be available at even more airports. For Socony-Vacuum is working hand-in-hand with the CAA—helping you get more and better airports by offering air-minded communities and business groups proved plans for airport development.

SOCONY-VACUUM OIL CO., INC., and Affiliates:
MAGNOLIA PETROLEUM COMPANY
GENERAL PETROLEUM CORPORATION

THE SIGN OF THE *Flying Red Horse*

Mobilgas
AIRCRAFT

SERVES EVERY
PETROLEUM NEED OF
AMERICA'S
AIR INDUSTRY!

PERSONAL PLANES • AIRLINES • AIRCRAFT BUILDERS • AIRPORT OPERATORS

This Is Private Flying

(*Continued from page 28*)

piled for a typical fabric-covered lightplane.

As I write this, I have just completed the first leg of a transcontinental circuit which began in Dallas and has taken me, minus zigs and zags, into 48 airports along a route roughly from Dallas to San Diego, north to Tacoma, and then across to Chicago.

My trip began at the Luscombe factory in Dallas, where FLYING leased a new Luscombe 8E which had been put in as perfect mechanical shape as was possible. After the factory mechanics gave the plane their okay I made an additional check to assure myself that it was in perfect shape.

Then at my airport stops I deliberately tampered with the airplane to see what the aircraft service operators along the way would do to it—and to my pocketbook. At no time did any of them suspect that I was an employee of FLYING magazine. Ostensibly I was on a cross-country trip representing my father's contracting business.

In the first three weeks of September I flew 4,324 miles, burned 296.4 gallons of gasoline and was in the air 51 hr. 20 min., counting time in aircraft traffic patterns and cruising about "just looking." My gasoline cost on the entire trip was only $84.94. As you read this article I will have completed the eastern leg of my trip which will have taken me across northeastern U.S., into New England, south along the Atlantic Coast, and then west to Dallas again.

Since I am an A&E myself, in addition to being a pilot, and since I myself work for an aircraft service operator, I believe that I was able to interpret my findings from both sides of the fence. The facts I report here are exactly as I found them without distortion, I believe, and without prejudice.

A word about the Luscombe I flew. It has given me excellent performance for its horsepower. Cruising speed for my entire western trip worked out to about 90 m.p.h.—and that includes headwinds and long climbs in that high-altitude country. This was a standard, stripped-down airplane; now that I look back on it, I would have been more comfortable, and suffered less from the noise, in the de luxe version of this ship. Aside from that, though, I found the Luscombe an excellent and economical cross-country airplane.

This first article in the series deals with general airport operations. Because these are so varied, I think it is best to take them up subject by subject in more or less a catalogue form.

AIR MARKING AND AIRPORT MARKERS: I happened to be in Tucson on September 8 when three CAA twin-engined Beechcrafts came in on the highly-publicized "Skyway 1" campaign. Skyway 1, as you may know, is a projected airway 40 miles wide between Los Angeles and Washington, D. C. Its promoters are primarily concerned with air-marking this route effectively.

I must confess that I saw very little satisfactory marking on my trip—either along Skyway 1 or anywhere else. Between Dallas and El Paso, for example, I checked every town I flew over for markings and saw them only at Wink and El Paso. Between Tucson and Phoenix I saw only one air marker and that was on the oil station at Coolidge and it did not have an arrow. In the Los Angeles area I could find markers only on the airport hangars. One reason I landed at Chico, Calif., was because I could see a big hangar roof marking, "RANCHAERO" on one side of the roof and the welcome words, "COFFEE BAR" on the other side of the roof.

I had quite a surprise in store for me at Donald, Ore. This little town has no airport but it did have its name in big letters with a directional arrow and an airport arrow pointing toward the landing field at Salem, Ore. This was the first city marking I had seen since leaving Los Angeles except for airport markers. I admit I probably missed some markers, especially over towns where I was flying high. I can only report that private pilots who expect to be guided along their way by markers are in for a sad disappointment. They hardly exist, out west anyway.

As a general rule, however, airport markers are fair. Among the airports where I kept a record, I would rate 22 airports excellent in this regard, 21 fair, and only two really bad. Included in my airport marking ratings I considered not only such things as painted names on hangar roofs, but wind tees, wind socks, boundary markers, layout of runways, and ease of distinguishing the runways from surrounding terrain. On several occasions I found planes in the traffic pattern taking off and landing both ways on the same runway because of difficulty of interpreting the wind tetrahedron.

One fault I have to find covers *all* airport markings I saw: every one is different. There is no standardization, and a private pilot has to be a detective to figure out what some mean. Every airport operator apparently devises his own particular system and the results, spread over dozens of airports, are baffling. Wind-direction indicators, for example, vary widely. While tetrahedrons are standard at large commercial and military fields, all sorts of miscellaneous tetrahedrons, wind tees, socks and assorted markers will keep the average pilot in a whirl as he flies cross-country.

And there is a world of variety in even *that* conglomeration. Some wind tees and tetrahedrons are fixed (depending on the personal opinions of individual operators), some are free-swinging. That means, of course, that it's impossible to tell whether the particular one you happen to be looking at is pointed the right way, is fixed, or is just plain stuck. So you do what I—and all experienced cross-country pilots—do: as you near the city where you plan to land, you start looking for columns of smoke, flags or

CHART CALENDAR

ONE of the private pilot's most important navigational aids is the sectional aeronautical chart. Because they are so important, FLYING publishes a corrected listing each month. Charts can be purchased for 25 cents each from the Coast and Geodetic Survey, Washington 25, D.C., or from one of its many authorized agents throughout the country.

SECTIONAL

Map	Date	Minor Change
Aberdeen	May 29, 1947	
Albany	July 11, 1947	
Albuquerque	Mar. 7, 1947	
Aroostook	July 3, 1947	
Austin	Aug. 7, 1947	
Beaumont	Aug. 1, 1947	
Bellingham	Apr. 30, 1947	
Birmingham	Apr. 11, 1947	
Boise	May 1, 1947	
Boston	July 23, 1947	
Burlington	July 9, 1947	
Butte	May 7, 1947	
Casper	May 16, 1947	
Charlotte	Apr. 21, 1947	
Chattanooga	Apr. 22, 1947	
Cheyenne	May 17, 1947	
Chicago	June 22, 1947	
Cincinnati	Apr. 13, 1947	
Cleveland	July 8, 1947	
Corpus Christi	Aug. 1, 1947	
Dallas	Sept. 10, 1947	
Del Rio	Jan. 22, 1946	Jan. 28, 1947
Denver	Sept. 12, 1947	
Des Moines	June 13, 1947	
Detroit	July 1, 1947	
Douglas	July 24, 1947	
Dubuque	June 17, 1947	
Duluth	May 28, 1947	
Elko	May 1, 1947	
El Paso	Aug. 27, 1947	
Fargo	June 15, 1947	
Glacier Park	May 12, 1947	
Grand Canyon	Aug. 28, 1947	
Grand Junction	Aug. 27, 1947	
Green Bay	June 9, 1947	
Huntington	Apr. 21, 1947	
Jacksonville	Aug. 15, 1947	
Kansas City	Mar. 18, 1947	
Klamath Falls	Apr. 29, 1947	
Kootenai	Apr. 21, 1947	
La Grande	Apr. 23, 1947	
Lake Huron	June 25, 1947	
Lake Superior	June 15, 1947	
Lake of Woods	May 24, 1946	Nov. 19, 1946
Lewiston	July 18, 1947	
Lincoln	May 29, 1947	
Little Rock	Mar. 19, 1947	
Los Angeles	Sept. 10, 1947	
Miami	Aug. 14, 1947	
Miles City	May 6, 1947	
Milwaukee	June 17, 1947	
Minot	May 21, 1947	
Mobile	Aug. 15, 1947	
Mt. Shasta	Apr. 25, 1947	
Mt. Whitney	Sept. 1, 1947	
Nashville	Apr. 7, 1947	
New Orleans	Aug. 1, 1947	
New York	July 15, 1947	
Norfolk	Apr. 25, 1947	
Oklahoma City	Sept. 23, 1946	
Orlando	Aug. 7, 1947	
Phoenix	Mar. 3, 1947	
Pocatello	May 12, 1947	
Portland	Apr. 20, 1947	
Prescott	Sept. 10, 1947	
Rapid City	May 9, 1947	
Reno	Aug. 15, 1947	
Roswell	Sept. 10, 1947	
Sacramento	Aug. 22, 1947	
Salina	Mar. 15, 1947	
Salt Lake City	May 6, 1947	
San Antonio	July 25, 1947	
San Diego	Aug. 13, 1947	
San Francisco	Aug. 15, 1947	
Savannah	Apr. 18, 1947	
Seattle	Apr. 23, 1947	
Shreveport	Apr. 16, 1947	
Sioux City	May 28, 1947	
Spokane	Apr. 23, 1947	
Trinidad	Sept. 8, 1947	
Tulsa	Mar. 26, 1947	
Twin Cities	June 10, 1947	
Washington, D.C.	Apr. 21, 1947	
Wichita	Mar. 5, 1946	Sept. 16, 1946
Williston	May 5, 1947	
Winston-Salem	Apr. 25, 1947	
Yellowstone Park	May 9, 1947	

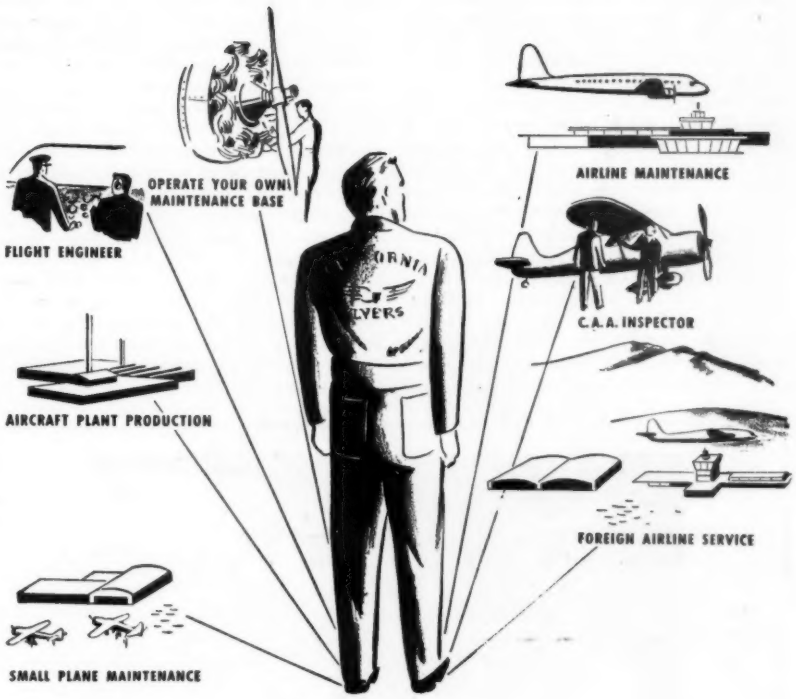
LOCAL

Atlanta	Aug. 14, 1947	Pittsburgh	June 3, 1947
Brownsville	Aug. 7, 1947	San Diego	Mar. 18, 1947
Honolulu	July 18, 1947	San Francisco	July 23, 1947
Los Angeles	Sept. 1, 1947	Seattle	Aug. 13, 1947
Miami	Aug. 23, 1947	Washington	June 6, 1947
New York	Sept. 6, 1947		

The various minor changes indicated are not of sufficient importance to make the previous print obsolete. All charts carrying dates previous to those shown in large type on this list are obsolete for use in flight.

YOUR CHOICE

of high salaried positions as a California Flyers A. & E. Mechanics Graduate . . .



California Flyers does far more than prepare you for a *single* job. It gives you your *choice* of these positions in the many branches of aviation.

In all 17 years of its operation the demand for California Flyers A. & E. Mechanics graduates has greatly exceeded the supply. Thus we know from past experience that every graduate should find the position he wants, where he wants it, in the branch of aviation he prefers.

Established in 1930

California Flyers is one of the oldest aeronautical institutions in America. Its graduates hold responsible positions in every field of aviation. It was selected by the Army Air Forces to train over 5,000 mechanics. It is a veteran in flying, mechanics and aircraft manufacture.

Approved for veterans and by the C. A. A.

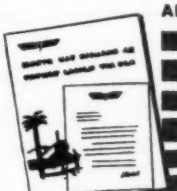
California Flyers offers career courses in Aircraft and Engine Mechanics, Aircraft Mechanics and Engine Mechanics. These courses are approved for veterans and by the Civil Aeronautics Administration.

A high salary in 8 to 12 months

Due to its recent expansion program, California Flyers offers *immediate enrollment*. That means you can enter today . . . be in a high-salaried position in 8 to 12 months.

Are you interested in flight training under famous California Flyers' system?

In response to many requests, California Flyers is considering the reopening of its flight school. Hundreds of young men trained under this system are now piloting all over the world. If you are interested in learning to fly, check coupon today. If California Flyers' flight school is reopened and is approved to offer flight training to veterans, you will be sent details.



CLIP THIS COUPON TODAY

Send for California Flyers' illustrated and informative brochure now. Get the facts.

APPROVED FOR VETERANS • AVAILABLE FOR NON-VETERANS

LIMITED HOUSING AVAILABLE FOR STUDENTS

CALIFORNIA FLYERS

SCHOOL OF AERONAUTICS

ADJACENT LOS ANGELES AIRPORT • INGLEWOOD, CALIFORNIA

CALIFORNIA FLYERS
School of Aeronautics, Dept. F-12
720 S. Redondo Blvd., Inglewood, Calif.

Please send me illustrated brochure containing full information about courses, tuition, etc. and application blank. I understand this will not obligate me in any way.

I am interested in Mechanics ☐ *Piloting* ☐

Name_____ Age_____

Address_____

City_____ Zone____ State_____

THERE IS NO FLYING INVOLVED *in* AVIATION MECHANICS COURSES *at* CALIFORNIA FLYERS SCHOOL *of* AERONAUTICS

blowing laundry. That's what I found to be most satisfactory throughout this trip.

On Northern Tacoma Airport, the single strip is set near low shrubs and I couldn't see the wind sock at all. I finally came in by following the traffic pattern. A much worse situation existed on the airport at St. Cloud, Minn., which was undergoing major construction. I knew the direction of wind here, came in at a 45° angle, and made a 45° turn to the right on my downwind leg when I saw a *Cub* taking off on a cross runway on what was normally a taxi strip. I circled the field again, intending to land in the same direction the *Cub* took off but I was cut off on the downwind leg by two Cessnas which were landing in still another direction. I went around again and came in this time, landing behind the Cessnas and ahead of the *Cub*, whose flight pattern I had to cross. The reason for this mixup was that the runways were torn up and the wind tee was inoperative. Some form of marking certainly is needed to define the flight patterns around every airport, especially on those airports using both a right- and left-hand pattern, depending on wind direction.

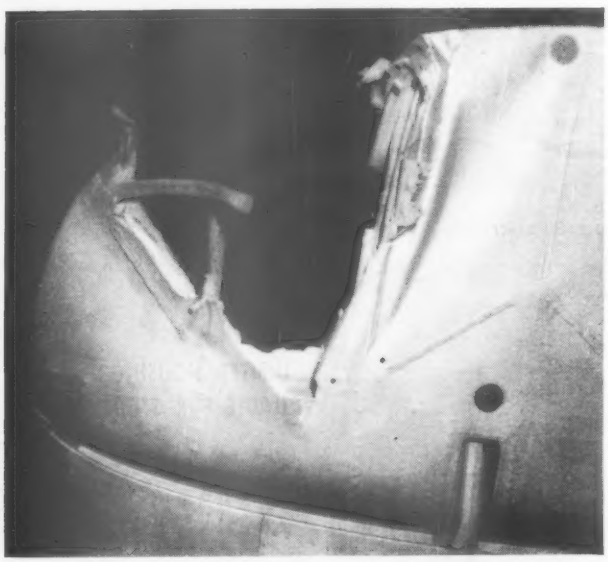
GASOLINE: I bought 296.4 gallons of gasoline on my flight at 34 airports. I do not find much evidence that there is an effort to squeeze pilots on gasoline. The lowest price I paid was 25 cents per gallon at Tacoma, Wash., and the highest price I paid was 32 cents in Missoula and Helena. In some places I got tax refund slips. My average price was a fraction under 28 cents per gallon. The greatest spread between cheapest and most expensive gasoline was seven cents per gallon. I do not consider this excessive—in fact, right today I could find almost as large a spread between different automobile filling stations in a city the size of Chicago. In some places I was gassed out of five-gallon drums, in others out of modern pits. It didn't seem to make much difference as far as price was concerned. As to the way the gasoline and oil are served up to the average private pilot, well, that will go to make up a large part of a subsequent article.

SALES KNOW-HOW: We've heard a lot of criticism about the sales ability—or lack of it—of aircraft service operators. From time to time the editors of FLYING have "tested" the business acumen of numerous aircraft salesmen, always with the same result: negative. Many airplane salesmen have expressed surprise when they have been told that FLYING does not own its own airplane. Yet to date—and even in the industry's hard times—company officials have not been approached by a salesman from a single manufacturer, distributor, or dealer. The often-expressed opinion that "no personal airplanes have been *sold*; they've all been *bought*," seems to have some basis in fact.

I decided to find out for myself. I consistently hinted on my stops that I would be interested in buying a larger plane than the one I was flying. Yet I did not get a single spark of interest from any operator I mentioned this to except at Miles City, Mont. A Piper dealer who should have spent some time trying to sell me a *Super Cruiser* instead spent his efforts in running down my Luscombe. An Aeronca dealer didn't even show any interest when I suggested that I had always wanted to buy an Aeronca. I tried out the idea on mechanics along the way, and none of them showed enough interest to refer me to the boss. And so it went.

It is quite evident that 19 out of 20 of these operators would never think of selling me a plane unless I went up and asked them to. One notable exception was the Stinson dealer at Miles City, Mont. He was quick to sense my interest in getting a larger plane and gave me a very nice sales talk. I also overheard him selling a Stinson *Station Wagon* to a cattle buyer who had already paid $1,000 down on a low-winged four-place plane. He did no running down of his competition—instead he paid the other plane high compliments but he kept mentioning point after point in his argument to show where, in his opinion, the *Station Wagon* would be a better bet for the particular uses of the cattleman. I don't think the conversation lasted 20 minutes, but as the salesman left for some literature I overheard the cattleman tell his partner, "If he'll give me a ship this week I'm going to get it."

AIRPORT REST ROOMS: I found only 10 wash rooms that I rated excellent. By that I mean they were both modern and clean. I would rate another 27 as only fair, and seven as poor. A good cleaning job was all that most of them needed to make them excellent, but they sorely needed that. In the main hangar at Abilene, Tex., the toilets were filthy, paint was peeling off the walls, the floors were littered and most everything was well-greased. On the other hand I found an outside privy at Richland Center, Wis., which was mighty rough but as clean as any modern washroom I visited. I must, incidentally, confess to a minor accident at Sky Harbor Airport at Phoenix, Ariz. The seat collapsed with me, depositing my embarrassed self on the none-too-clean floor. When I inspected the cause of this disaster, I discovered the seat bracket was broken and the whole seat



FLYING SHORT CIRCUIT

FIFTY minutes out of Bermuda recently, four tremendous electrical bolts blasted through a Naval R5D (DC-4). Flashes of fire streaked down the port side of the plane, which shuddered under the impacts.

Lieut. V. F. Van Hoomissen, the pilot, climbed out of light rain from 4,000 feet to 8,000 feet immediately after the second explosion; but as the plane roared through light snow, a third and fourth explosion rocked the R5D. Crew members noticed a strong burning odor, but were unable to locate a fire.

Ground inspection later showed nearly 1½ square feet of the port elevator blown out near the static discharge wick; a 1½ inch hole burned in the bottom of the starboard elevator; and the forward loop antenna pitted, apparently by a strong electrical discharge.

Final investigation proved beyond a reasonable doubt that the plane itself caused the four bolts of lightning—that the R5D was a flying short circuit. Apparently it was moving through fields of electrical disturbance which varied in intensity. At times, small areas became highly charged with electrical particles. The R5D sped through the turbulent spaces—and apparently "closed the gap" between highly-charged areas. The four discharges resulted.

Photograph above was taken from below the port elevator.

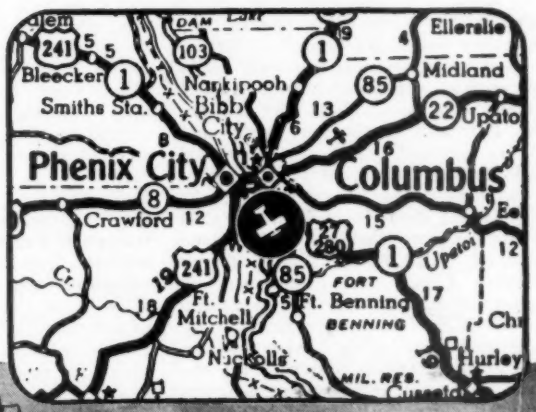
Next Time You Fly South—

GET EXPERT SERVICING AND FUELING AT THE COLUMBUS, GEORGIA AIRPORT

Whether heading to Columbus, Georgia on business, or flying through on your way to Florida resort cities, you'll find real Southern hospitality and comfort at this modern Municipal Airport.

The Airport has two sod runways—the East-West is 4,500 feet long and the North-South is 3,500 feet long. The King's School of Aviation has repair shops, storage facilities and refueling services available to all plane owners. Government-approved flying lessons are given by competent instructors.

Visitors to Columbus can see famous Fort Benning, pride of the infantry, or stop at the equally famous spa at Warm Springs.



CITIES SERVICE

Columbus Airport distributes high-quality Cities Service aviation products—Cities Service Aero Gasolenes, Koolmotor Aero Oils, Trojan Aero Greases and other aviation specialties.

CITIES SERVICE

Cities Service Aviation Fuels and Lubricants

was loose. A hazard if I ever saw one.

GENERAL ATTITUDE: I had heard a good many stories about how transient pilots were kicked around by uncouth airport characters who saw little or no profit out of being polite to visitors. I stopped at a number of places specifically spotted by AOPA members who had complained about poor service and discourtesies. Frankly, I didn't run into much. I think this is a situation that is already taking care of itself. On this route I had five "gripe airports" to which I planned to give particular attention. Three of them were already out of business. At the other two I received good treatment. By this I don't mean that I got super-service treatment, however. On the contrary, a good many employees, line boys especially, seem indifferent and even ignorant about what courteous service means. I don't put it down to deliberate actions; they just don't know any better. My most pleasant encounter with really good service was at Bellflower Airport between Long Beach, Calif., and Los Angeles. I stopped here for two nights and as I was leaving I found a courtesy card attached to my throttle informing me that my windshield has been washed, the plane gassed, the oil checked, the tires had air put into them, and the plane dusted off. "Call Again," said a cheery postscript. I will when I am near Los Angeles again. There were welcome signs about Bellflower airport, too.

A strange angle in this service situation was the fact that I couldn't buy the widely used sectional charts at nearly a score of the airports I stopped at. About four times I had to buy regional charts because sectionals weren't available. A lot of places they were obsolete—and I paid anything from 15 cents to the regular 25 cent price for them. In a few places they gave me the obsolete charts. I don't know why charts are scarce. "We're temporarily out of them" seems a more or less universal alibi—and the airports were more likely to be out of local charts than others farther along my route. My El Paso chart was dated July 25, 1946. I never did get a Sacramento chart, though I tried to get one at five California airports.

Incidentally, a few of those obsolete charts I was forced to take were clearly marked as being obsolete. Several, however, were not—despite the fact that such marking is required by law.

AIRPORT RESTAURANTS: It is a poor commentary on the state of cross-country flying that I found only four airport restaurants that I would rate as excellent. They had good food, were modern, and the service was good. The food was good at a number of others, but the service was poor and the surroundings anything but conducive to a good appetite. Please understand, however, that I stopped to eat at only 21 airport restaurants on my trip. Ten other airports had no facilities at all. I nearly starved to death between Miles City, Mont., and St. Cloud, Minn. I left Miles City in the morning after a rather light breakfast—which proved to be a rattling bad mistake. I stopped successively at Bowman, N. D., Mobridge, S. D., and Aberdeen, S. D. None of these places, including Miles City, had an airport restaurant. Near starvation, I came in to St. Cloud, Minn., near sundown and ate at the fine airport restaurant there. I feel a very warm place in my stomach toward St. Cloud. In reviewing some of the places I ate in, I consider myself fortunate that I ended up on the sick list only once during the 23 days of my trip.

HOTEL ACCOMMODATIONS: Fixed base operators are in nowise responsible for the rugged time I had with hotels. All of them did their best to help me get a room.

I encountered everything from Mexican fiestas (at Fresno) to strike-bound hotels, and towns swarming with hunters. At Rodeo, N. M., another pilot and I got a lift in to town and the woman proprietor of the hotel and general store thought we were hitch-hikers when we debarked from the automobile. She refused to give us a room at all until we convinced her that our planes were out at the airport, and even then she must not have been entirely sold on us. She assigned us both, complete strangers to each other, to the same room. I kept waking myself up by catching my foot in a hole in the top sheet.

At Los Angeles I had trouble getting accommodations until the hotel bureau got me in at the Hayward. At Eugene, Ore., I called from the airport and they gave me a reservation but would hold it only 15 minutes. I just made it. Then I went back to the field. Afterwards, when I went to take a bath, I found the door to the bathroom was locked. My bath had been grabbed by someone else and I didn't have any luck getting it back.

A good many hotels in Tacoma were on strike, and when I finally did find a room the walls were so black you couldn't tell what pattern the wallpaper had once had. Most of the ceiling was peeling off, too. The windows opened out into an areaway with a solid concrete wall three feet away. A metal screen over the skylight and about a foot above the window sill was covered with old bottles, a woman's dress, old rags, cigarette butts, and paper scraps.

TRANSPORTATION TO AND FROM AIRPORTS: There is only one description of this: it's rotten. Here is one thing that is sorely wrong with private flying. Except for fields that are airline terminals (they are served by reasonably priced taxicabs and airline limousines), I found ground transportation to be non-existent. I have heard of some airports that have a car or station wagon to take pilots into town for a flat fee, but I didn't come across one on my entire trip.

My total transportation bills to and from airports was $60.97—which is more than 70 per cent as much as I spent on gasoline during the entire trip. Taxi fares cost me from 55 cents to $7 each, including tip. I tried public transportation three or four times where it existed, and in Los Angeles it took me anywhere from 1½ to two hours to get to my destination. In Tacoma, the bus took a half hour after nearly an hour wait—and I still had to walk ¾ mile along a highway to reach the field. Public transportation is also fairly difficult in strange cities where you don't know what buses or street cars to take, or exactly where you're going. In Los Angeles, three times my taxi drivers themselves had to call and ask where the airports were. I got a lift into town only twice—at Rodeo, where the hotel proprietor mistook me for a hitch-hiker, and at Helena. At Tacoma I shared the cab fare going into town. That saved me $1.10. As a matter of fact, I was only really scared twice on this trip. Once was when my bus bound for Chicago airport nearly got swiped by a big truck. The other was in St. Cloud, Minn., when an ex-hot rock tried to show me that you could fly in a Chevrolet cab.

This is the story as far as general airport operations and cross-country flying is concerned. Next month's article will describe in detail line service found on the trip. END

"Contact!"

⅛ SHORTER TAKE-OFF: Automatically, with engine at full throttle, Aeromatic Propeller assumes low pitch. Gets plane off ground quickly. Allows full use of take-off power.

⅓ HIGHER RATE OF CLIMB: Automatically responds to natural forces. Increases pitch as air speed increases. Gets plane to cruising level fast, on minimum fuel.

GREATER CRUISING RANGE AND SPEED: Aeromatic automatically maintains the most advantageous pitch for top cruising performance on minimum fuel at any level up to critical altitude.

SAFER LANDINGS. Aeromatic automatically adjusts its pitch for a long, flat glide. Moves to low pitch instantly for a quick pick-up if pilot overshoots his field.

AEROMATIC* PROPELLERS Insure Correct Pitch—*Automatically!*

Whether they're taking off, climbing, cruising or landing, these planes are sure of peak performance because their Aeromatic Propellers select the correct pitch for every flight condition. And they do it without any extra controls, instruments or gadgets. That's why more and more private fliers are asking for Aeromatics . . . why more and more planes are equipping with these *exclusive* propellers!

WRITE FOR INFORMATION! If you own a new plane or plan to buy one, enjoy the extra advantages of an Aeromatic Propeller. Write to your aircraft manufacturer or distributor about an Aeromatic for your plane. Or drop us a line for your free Aeromatic booklet. Koppers Co., Inc., Aeromatic Propeller Dept., 332 Scott St., Baltimore 3, Maryland.

CUSTOM TAILORED FOR THE PLANES THEY FLY
Aeromatics are available now for most new planes and are being approved for other makes and models.

Aeromatic

The propeller with a brain K KOPPERS *for your personal plane*

Air Controlled Automatic Propeller—Licensed under Patents of Everel Propeller Corp.
*

The Florida "Ridge"

(*Continued from page 44*)

size and charges , characteristic of some of the more prominent resort cities. The Florida State Hotel Association, 224 W. Forsyth Street, Jacksonville, Fla., has a list of recommended hotels in different cities including their capacity and lowest rates. The Association claims that Florida has ample hotel accommodations for persons who desire to visit the state. Prices listed in this booklet begin at $2, European plan, average about $3 to $4 per day, and go up to $20 per day.

These rates are for the height of the winter season and there is no guarantee that the type of accommodation you wish will be available. Therefore this article is being published early in the winter so that FLYING readers will have plenty of time to make reservations.

The Florida lake and ridge area is shown on the Orlando (O-8) and Miami (N-8) sectional charts. A straight line drawn through, or close to Lake City, Gainesville, Ocala, Leesburg, Grove Camp, Winter Haven, and Lake Istokpoga will cover the region which is about 200 miles long, and for the purposes of this article, about 50 miles wide.

Flying along the wide, golden beaches of the east coast is fascinating on the way south to Miami but an even more interesting route in variety of scenery and recreation is a trip along the course mentioned. One may stop at any of the several cities for a long stay or continue on to Miami. Before taking off on the trip, write to the Aviation Division of the State Improvement Commission, P.O. Box 149, Tallahassee, and ask for a copy of their Florida airways map. It pictures the entire state and includes many airports not shown on sectional charts which you'll want to know about. It is free but a six cent stamp must be enclosed for postage and handling.

There are 33 airports and eight seaplane bases in the 210-mile wedge from Lake City to Sebring and flyers are never more than 17 miles from an airport. Some of the airports not shown on sectionals are excellent fields licensed by the State of Florida. Many of the towns are airmarked and there are well-defined landmarks to navigate by. The highest hills are not over 300 feet high.

There are so many things to see and do in central Florida that perhaps the best way to describe it all would be to trace a proposed flight through the region. A flight south from a northern city should be planned to enter Florida about at Lake City, near the Georgia-Florida line. Flights down the coast might head for Jacksonville and then swing west-southwest to Lake City, while those from the midwest should plan to enter Florida somewhat west of Lake City. This enables a detour around the great Okefenokee Swamp in southern Georgia. Railroads lead into Lake City from three directions.

Lake City has two airports, restaurants and four listed hotels. The airports are the Municipal Airport and Witt Field, both of which offer fuel and service. The Osceola National Forest is northeast of the town and is open to hunting. A railroad leads southeast to Lake Butler, a very small town which has an abandoned military field that can be used if necessary. Landing planes should keep a sharp watch for cattle.

At Starke there are two airports, Conway Airpark and Starke, at which fuel and minor service can be had. This town is the home of Gen. Jonathan Wainwright and is a few miles east of Camp Blanding. The Conway Airpark is within walking distance of town. Neither airport is shown on sectional charts. From Starke to Gainesville is a short flight, made easy by air markers at Hampton, Waldo, and Fairbanks. The University of Florida is located in this city, which is a railroad center as well as a center for the agricultural activities of the surrounding area. On the sectional chart two airports are shown, Alison Field and Stengel Field, both of which are available to private flyers. Stengel offers major repairs, has food and cabins on the field, and an entire community built around it which is run in conjunction with the airport.

South of Gainesville is Payne's Prairie, which is alternately a lake and a prairie, depending on season. At this time of year it is usually dry and will have cattle grazing over it. Just under 20 miles south of the town is Orange Lake which, according to the Florida Game and Fresh Water Fish Commission, is one of the best bass lakes in the state.

The next large town is Ocala, a busy city of over 7,000. It is another local center for agriculture and industry and has two attractions that make it worth stopping at. Taylor Airport, south of the city, has servicing and repairs, while four miles east, near the small town of Silver Springs, is Silver Springs Aero Lodge airport. This field is state-licensed but is not yet on sectional charts. Famous Silver Springs is within walking distance of the airport. This is a group of 150 springs issuing from the limestone common in the region, and the water is extremely clear. Glass-bottomed boats (rides $1 and $2) take visitors around, and caverns up to 80 feet below the surface, from which the water issues, can easily be seen. The water has a uniform temperature of 72° and bathing is very popular. There are sandy beaches and dressing rooms. Bathing suits can be rented.

South of Ocala can be seen a large swath of bare ground. This is the right-of-way of the Cross-Florida Canal which was started by the Federal Government around 1934 but abandoned before it was completed. Bellevue and Summerfield are air-marked towns on the route from Ocala to the next point of interest, the Leesburg area. Many Florida air markers have been painted on highways through the cooperation of the State Aviation Division and the State Road Department; the Summerfield marker is one of them.

Just before Leesburg there is a small town known as Fruitland Park. Gray's Airport here is not shown on sectionals but is another of the state-licensed fields, and has service as well as food and nearby tourist cabins. About a mile east of the field is Lake Griffin which has excellent fishing. Several camps in the vicinity rent boats. The Leesburg Aviation Center, little over a mile north of the town, is an airport which has an adjacent seaplane base and can offer good service to visitors. Leesburg itself is the seat of Lake County—so called because of the 1,400 lakes in the area. This is the place to fish for bass. Open lake fishing or fishing in one of the several cypress-lined canals is popular.

Howey-in-the-Hills, a small town at the south end of Lake Harris, will impress the flying visitor with the citrus fruit production of this section. Within a two-minute walk of Howey Airport is a resort hotel offering both food and lodging. Citrus fruit is processed and packed for shipment north at the packing houses here. Visitors are welcome. The airport (not on sectionals) can service your plane, has an air marker on the roof, and there is sup-

15 YEARS AGO

FROM the December, 1932, issue of this magazine:

Gen. "Billy" Mitchell disproved the Navy's claim that it was "impossible for airplane bombers to sink battleships" in his article "What I Think About Airplane Bombers." He described the damage resulting from practice bombings on various ships.

The Berliner-Joyce P-16 was a two-place sesquiplane with a large top gull-type wing. It was equipped with a water-cooled engine which the Army Air Corps considered preferable to the radial air-cooled engine used on commercial and private planes.

Igor Sikorsky and William B. Stout debated the economic value of superplanes in an article "Are Super-Planes Commercially Possible?" Conclusion reached was that the giant airplane was just the dream of an engineer who had not checked dividend figures with flying characteristics and that the smaller 20 to 30-passenger planes would continue to be used for some time to come.

Boeing delivered 54 F4B-4's to the Navy. Designed as carrier fighters the planes were "compact, maneuverable and fast."

Winner of the first prize in the International Air Races held in Berlin was a Polish plane, RWD. Most notable feature of the plane was its adherence to typical American design—a high wing cabin with an air-cooled radial engine.

An Italian, Dr. Giovanni Pegna, designed a super-speed seaplane, the Pc-7. It was a flying torpedo with wing surfaces reduced to a minimum. Both air and water propellers were geared to an 850-h.p. Isotta-Fraschini engine by an ingenious mechanical arrangement so that it could be changed over from one to the other in an instant by throwing a single lever. Calculated speed of the plane was about 375 m.p.h.

New Stinson Flying Station Wagon

It's here! Stepped up in range, speed, payload!

The great new Stinson for '48

New? Yes! But more important, the new 1948 Stinsons—of *proved* design—are America's most *useful,* most *practical,* personal planes.

For a Stinson carries four people comfortably and economically—is equally useful for family or business travel. Its roomy interiors—newly styled by the famous designer Henry Dreyfuss—provide plenty of luggage space.

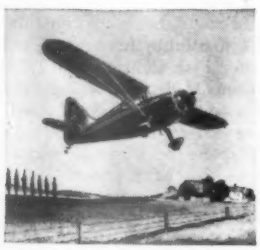
Long time fliers prefer Stinson dependability and safety. Beginners are delighted with Stinson flying ease and simplified control. You can learn to fly solo in ten hours or less.

Visit your Stinson dealer for a look at the Stinson Voyager or Flying Station Wagon. See for yourself why Stinson leads in popularity in the 4-place field.

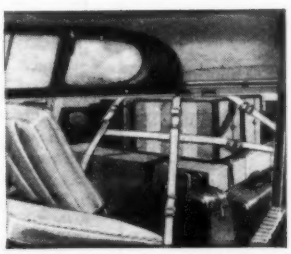
For literature write Stinson Division, Dept. D, Consolidated Vultee Aircraft Corp., Wayne, Michigan.

For 22 years, builder of America's most useful personal planes

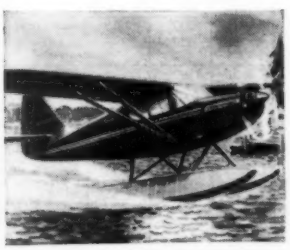
Stinson



Finer "Fly-anywhere" performance
Quick take-offs. Slow landings. Cruises at 130 m.p.h., at 5,000 ft. Range, 554 miles.



New, higher pay-load capacity
640 cargo and baggage lbs. plus pilot — or four people with 100 cargo-lbs.



New, greater all-purpose utility
28% greater range, 14% more useful load. Can be equipped with floats or skis.

New ease of control
The spin-resistant Stinson is so easy to fly that beginners solo in ten hours or less.

Stinson has new flight instruction plan for business and professional men interested in saving time and money—Write W. H. Klenke, Jr., General Sales Manager, Stinson, Wayne, Michigan.

CONVENIENT LANDING FIELDS ON INLAND FLORIDA ROUTE

Landing field (longitude and latitude)	Distance to Nearest town	Number of runways	Length of longest runway	Gas grade	Service facilities	Write to
Witt Field* (30°11′—82°40′)	2 mi. WSW Lake City	2 pvd.	3600′	80	Minor reprs.	Alton Witt, Witt Field, RFD Lake City
Municipal (30°11′—82°35′)	2 mi. E Lake City	6 pvd.	6700′	80	Major reprs.	Joe Gray, Municipal Airport, Lake City
Lake Butler (29°59′—82°22′)	2 mi. SW Lake Butler	4 pvd.	6000′	None	None	Surplus Navy airport
Conway Airpark* (29°58′—82°07′)	½ mi. W Starke	2 sod	1800′	80	Hangars	Telephone 147 Starke; Lacy Conway, P. O. Box 303, Starke
Starke* (29°56′—82°09′)	3 mi. SW Starke	3 sod	3500′	80	Minor reprs.	Phone 177 Starke; R. G. Kidd, Jr., 715 W. Madison Ave., Starke
Municipal (29°42′—82°16′)	4.5 mi. NE Gainesville	3 pvd.	4500′	80 & 91	Minor reprs. Hangars	Mr. Lipscomb, Gator Flying Service, Municipal Airport, Gainesville
Stengel* (29°38′—82°23′)	4 mi. WSW Gainesville	3 sod	3800′	80 & 91	Major overhaul, hangars, food & cabins	Phone 9120 or 2259; Carl Stengel, Stengel Field, University Station, Gainesville
Montbrook (29°21′—82°28′)	3.2 mi. S Williston	4 pvd.	7000′	Request	None	Surplus airport
Aero Lodge* (29°12′—82°04′)	4 mi. NE Ocala	2 hard sand	2265′	80	Hangar—Minor reprs.	Kenneth Richards, P. O. Box 24, Silver Springs
Taylor (29°10′—82°09′)	1.5 mi. SW Ocala	3 pvd.	4000′ lighted	80 & 91	Hangar-Repr.	Manager, Taylor Field, Ocala (Phone 402)
Gray's* (28°53′—81°53′)	3 mi. N Leesburg	2 sod	2600′	80	Hangar-Repr. food, cabins	Earl H. Gray, Leesburg (Phone 406 White)
Aviation Center* (28°50′—81°52′)	1.5 mi. N Leesburg	2 asphalt	1500′	80	Hangar-Repr. seaplane docking	Hal Hoover, P. O. Box 447, Leesburg (Phone 413 Blue)
Waterman (28°50′—81°41′)	1 mi. SSW Eustis	4 clay	2300′	80	Hangar- minor reprs.	Airport Manager, Waterman Airport, Eustis
Leesburg AAF (28°49′—81°49′)	4 mi. ESE Leesburg	2 pvd.	5000′	None	None	City of Leesburg, Leesburg
Howey* (28°43′—81°47′)	½ mi. W Howey-in-the-Hills	2 sod	2000′	80	Hangar, food	Waldron F. Schans, Palm Ave., Howey-in-the-Hills
Kerlin* (28°35′—81°44′)	½ mi. NE Minneola	All sod field	1800′	80	Hangar	Eliot L. Kerlin, 500 S. Osceola St., Orlando
Ryan (28°42′—81°30′)	1 mi. N Apopka	2 sod	2800′	80	Hangar, minor reprs.	Airport Manager, Ryan Field, Apopka (Phone 141)
Municipal (28°32′—81°50′)	3 mi. S Groveland	2 sod	2000′	80	Hangar, minor reprs.	W. H. Sheets, Municipal Airport, Groveland
Municipal (28°17′—81°25′)	2 mi. W Kissimmee	paved	5000′	80	Hangar, minor reprs.	Wm. Seal, Manager, Municipal Airport, Kissimmee
Kissimmee Seaplane Base (28°17′—81°24′)	South boundary, city of Kissimmee	Unlimited		80	Beaching, shoals near shore—use with caution	Wm. Seal, Manager, Municipal Airport, Kissimmee
Municipal No. 1 (28°04′—81°57′)	2 mi. N Lakeland	3 pvd. (lighted)	5000′	80 & 91	Hangar, major reprs.	L. B. Roberts, Mgr., Municipal No. 1, P.O. Box 1011, Lakeland
Skyland* (28°03′—81°59′)	2 mi. WSW Lakeland	3 sod	2800′	80 & 91	Hangar, minor reprs.	LeRoy Silkett, 1603 Holly Road, Lakeland, Fla. (Phone 4-2912)
Municipal Seaplane Base (28°04′—81°56′)	Adjacent to East Side Municipal No. 1	Unlimited area		80	Uses airport facilities	L. B. Roberts, Mgr., Municipal Airport No. 1, Lakeland
Municipal (28°08′—81°39′)	1 mi. NW Haines City	2 sod	1900′	80	Hangar, minor reprs.	Delbert Collins, Mgr., Municipal Airport, Haines City
Haines City Seaplane Base (28°06′—81°39′)	South boundary of Haines City	NS landing area	5000′		Beaching fac. only	City manager, Haines City
Gilbert (28°04′—81°45′)	3.5 mi. NNW Winter Haven	2 pvd.	4000′	80 & 91	Hangar, reprs.	Wallace Johnston, Mgr., Gilbert Field, Winter Haven
Winter Haven Seaplane Base (28°02′—81°44′)	Adjacent to E side Gilbert Field	Landing area	5000′		Beaching fac. only	Wallace Johnston, Mgr., Gilbert Field, Winter Haven (Phone 2-8411)
Municipal (27°53′—81°37′)	2.3 mi. WSW of Lake Wales	2 pvd.	4000′ (lighted)	80 & 91	Hangar, reprs., food, radio reprs.	W. J. Thornton, Mgr., Municipal Airport, Lake Wales (Phone 23-741)
Wauchula (27°33′—81°46′)	2.5 mi. ENE Wauchula	4 sod	2100′	80	Hangar, minor reprs.	Dr. L. W. Martin, P. O. Box 60, Sebring (Phone 128)
Municipal (27°35′—81°32′)	1.5 mi. SW Avon Park	2 pvd.	3900′	80	Hangar, minor reprs.	R. G. Herring, Mgr., Municipal Airport, Avon Park
Lake Lotela Seaplane Base (27°34′—81°29′)	2 mi. SE Avon Park	Landing area	6600′	80	Beaching fac.	R. G. Herring, Mgr., Municipal Airport, Avon Park
Martin Seaplane Base* (27°29′—81°27′)	Adjacent to SW border of Sebring	NE-SW area 5 mi. EW area 2 mi.		80	Minor reprs., docking fac.	Dr. L. W. Martin, P. O. Box 60, Sebring (Phone 299-J)
Municipal* (27°28′—81°29′)	4 mi. SW Sebring	2 sod	2700′	80	Hangar	Dr. L. W. Martin, P. O. Box 60, Sebring (Phone 299-J)
Hendricks (27°27′—81°20′)	6.5 mi. ESE Sebring	2 pvd.	5000′	80	Maj. reprs.	H. C. Atwerter, Mgr., Hendricks Field, Sebring

* State licensed airport.

posed to be one near the hotel and one at nearby Astatula. An airport is shown on sectionals at Minneola, several miles south of Howey. Information indicates that regular service is not available except by prearrangement. The name is Kerlin Field and the hangar roof bears that name.

Groveland, west of Minneola, is a small town of 800, determined to have an airport. The hangars have living accommodations built above them—something of a novelty. Fuel and service are available and if you missed seeing a fruit packing plant at Howey, this town has one.

From Groveland south to the next cluster of towns it is recommended that flyers follow the highway, as shown on the sectional, because the area is sparsely populated and quite rough. A tip from oldtimers in Florida aviation will add to your peace of mind; over such terrain as this, should you have to come down, look between the cypress swamps and the pine trees. There is an area—about 100 feet wide—where neither cypress nor pine will grow and you can usually get a plane onto such a clearing if nothing better is available.

In the Lakeland-Lake Alfred-Haines City area there are several airports and seaplane bases which offer services up to and including major repairs. The most interesting sight in the area is probably the Cypress Gardens at Winter Haven. This place is nationally known as a water sports area.

Hotel and airport facilities are available in Lake Wales where the famous "Singing Tower" is located. The Lake Wales Municipal Airport, two miles from town, has hangars, service, repairs, and a rotating beacon. Someone is on duty at all hours here.

When you pass the air marker at Frostproof, halfway between Lake Wales and Avon Park, you'll begin to realize that you really are getting into the deep south! At Avon Park is the Highland Hammock State Park, which has fine examples of cypress and laurel oaks. The end of the ridge section is reached at Sebring. Fuel, service, and overnight facilities are available and here is another good bass area. Beyond are the Everglades—which are best stayed away from. Flyers planning to continue on to Miami are urged to follow the Seaboard Railroad tracks to Okeechobee and the East Coast.

The hunting and fishing seasons are in full swing in midwinter and full details of the seasons and regulations are contained in a pamphlet available from the Game and Fresh Water Fish Commission, Tallahassee. The state is divided into several districts and two or three days out of each week are closed for many species. There is not space here to list all the ramifications of this arrangement.

Many airports in the area have been mentioned here. The State Aviation Division's Map shows them all and should be used as a guide. "The Ridge" offers visitors a chance to explore for days, and has airports so well distributed as to make such activity convenient, safe, and fascinating. It pays to get away from the beaten path, the usual resorts, and the usual resort activities.

—ROBERT J. WHITTIER

Blueprints guide today's spectacular aircraft developments... and the brilliant future of all aviation. *Back* of those blueprints is the aeronautical engineer — whose creative genius, technical knowledge, and professional skill bring about the improved designs, the new aircraft, the new power plants... that advance aviation so swiftly.

A career in this fascinating, inspiring profession can be YOUR blueprint for a bright future. You will be in *Aviation*—a field in which the possibilities have barely been scratched. You will be in a profession vital to that field—Aeronautical Engineering. Get the *right* start with Northrop training. The Northrop name means vision, leadership, and outstanding accomplishment in aeronautical engineering education... just as it does in aeronautical research, development and manufacturing.

Your training is conducted by a division of the famous Northrop organization. It is based on the long experience of a major employer of engineers—experience that has provided knowledge of exactly what preparation you must have for security and success in aeronautical engineering. The two full years of Northrop's practical, intensive course give you an *earlier* start, a *sound* start, on an interesting, profitable career.

SEND COUPON FOR CATALOG AND COMPLETE INFORMATION

N. A. I. also offers an outstanding course in Aircraft and Engine Mechanics... approved by Civil Aeronautics Administration..

NORTHROP
Aeronautical Institute
Division of Northrop Aircraft, Inc.
Dedicated to the advancement and training of men for careers in aviation
1519 East Broadway
Hawthorne, California

NORTHROP AERONAUTICAL INSTITUTE
1519 E. Broadway, Hawthorne, Los Angeles County, Calif.

Please send me the Institute catalog and complete information, including starting dates of classes. I am interested in

☐ Aeronautical Engineering
☐ Aircraft and Aircraft Engine Mechanics (A&E)

Name _____

Address _____ Age _____

City _____ Zone _____ State _____

Check one: ☐ Veteran ☐ In Service ☐ Civilian

APPROVED FOR VETERANS

Air War on the Bug

(*Continued from page 21*)

worst diseases may be stopped by aerial doses of DDT. When insect carriers are eliminated, the diseases will be licked, say entomologists. Malaria, spread only by mosquitoes, takes a toll of 200,000,000 persons a year, with a resulting 2,000,000 deaths. To date no war has been more destructive. Yellow fever—the "yellow-jack" of the Spanish Main, scourge of Africa and the Caribbean, important factor in the Aztec Empire's fall, and sole cause of the French failure to build the Panama Canal—is another exclusively mosquito-borne disease. So is dengue or "breakbone" fever which has hampered seriously such military operations as the U. S. Saipan campaign. Filiariasis, which causes the hideous deformities of elephantiasis so dreaded by troops in certain Pacific areas, is mosquito-carried. Bubonic plague, the "black death" of history, is carried from infected rodents to man by the flea. The mite transmits endemic typhus, scourge of jails and concentration camps. Typhoid, dysentery, cholera and probably poliomyelitis are spread by the common housefly which carries fecal contamination. The tsetse fly with his deadly load of sleeping sickness has virtually driven the white man and his cattle from the fertile African plain. There are many more, but this list is enough to indict the insect as one of the world's great public enemies.

The modern airplane is a strange foe for the feeble insect. But this man-made dragon fly is being developed as one of the most effective devices in the war against disease. DDT can be dispersed from low-flying planes with ease, efficiency and economy. Development of air-sprayed DDT resulted from the combined efforts of cooperating agencies such as the Army Air Forces, the U. S. Department of Agriculture, the Navy, the Tennessee Valley Authority and various private groups. Their efforts have been coordinated for the most part by the Office of Scientific Research and Development, and the Army Committee for Insect and Rodent Control.

During field trials in Florida, Panama and certain overseas areas, equipment was developed, procedures worked out, and a fairly accurate determination of necessary dosages made. Pilots were trained in the specialized techniques required, and ingenious methods of counting mosquitoes were devised to determine the relative efficiencies of the aircraft employed. Entomologists, pilots, physicians, chemists and engineers cooperated to develop and test new methods and devices. Field expedients worked out by men with actual experience were checked and evaluated under controlled conditions. Resultant safe and efficient techniques are sufficiently reliable to kill most of the flies and mosquitoes in any given area.

Insects are killed in three ways. The first is by initial "knockdown" when the bug on the wing meets a droplet of DDT. For this effect, the droplets are preferably very small—10 to 100 microns in diameter. The second is from so-called "residual effect" which depends upon a DDT solution deposit on leaves, walls or ground, there to kill insects which alight. Under favorable conditions—as on an inside wall—this residual effect may last two months, but the period is shorter in the sun or on certain types of leaves. The third method is by "larval kill." DDT quickly kills larvae in puddles of water, streams or lakes. For the latter two purposes, size of the droplets is of less importance but the type of jungle cover makes a difference in the effectiveness of the spraying project. Under favorable circumstances, 98 per cent of the mosquitoes in a sprayed area have been killed.

DDT was disseminated by wartime aircraft in both forward and rear areas. Forward areas included beach-heads, advanced bivouacs and spear-heads of invasions over which armed combat craft were flown. Unarmed aircraft were employed in rear areas, such as bases of all types and areas in which malaria control and survey units could not operate effectively.

Choice of aircraft for spraying operations depends upon the actual availability of planes, the tactical situation, and the capability of the planes to perform a specific mission.

In forward areas where armed aircraft were required, any plane which could carry standard Chemical Warfare Service equipment was used. Such planes as the B-25, A-26, P-38, P-47 and P-51 proved their adaptability. These planes can

DO YOU KNOW..?

TEST your aviation I.Q. with this quiz by G. Sidney Stanton of the Civil Aeronautics Administration. Here's how to score yourself: 100 per cent and you're an airline pilot; 90 per cent and you're a flight instructor; 80 per cent, commercial pilot; 70 per cent, private pilot; 60 per cent, student pilot; 50 per cent or less, you're a Dilbert.

1. When stopping the engine on a lightplane, the customary method is to: (1) turn off fuel, wait for the engine to stop and then turn off the switch, (2) open the throttle and immediately turn off the switch, (3) turn off the switch and immediately open the throttle, (4) turn off the fuel and the switch simultaneously?

2. Every pilot should be able to determine weather conditions from the teletype reports which are available at all large airports. How well can you read the following report? TELETYPE MESSAGE: PT S7 M3⊕11/2L-FK 146/66/65→4/997

(A) The visibility is (1) 1½ miles, (2) 2 miles, (3) 3 miles, (4) 11 miles?
(B) The wind direction is: (1) east, (2) west, (3) northeast, (4) northwest?
(C) The ceiling is: (1) 300 feet, (2) 700 feet, (3) 1,100 feet, (4) 3,000 feet?
(D) Precipitation is: (1) snow, (2) thunderstorms, (3) drizzle, (4) freezing rain?
(E) Conditions for flight are: (1) excellent, (2) good, (3) fair, (4) poor?

3. While flying at cruising speed you note that the nose of your airplane is on a line with the horizon. If you advance the throttle (increase power), but hold the nose on the horizon, the plane will: (1) ascend, (2) descend, (3) remain at approximately the same altitude?

4. Two planes, the Hare, and the Tortoise, depart at the same time for a destination 500 miles distant. The Tortoise flies non-stop at the rate of 100 m.p.h. The Hare stops every hour for a "rest period" of 20 minutes. In order to win the race the Hare must fly at a speed slightly over: (1) 115 m.p.h., (2) 125 m.p.h., (3) 135 m.p.h., (4) 150 m.p.h.?

5. An airplane which is rented, used for student instruction, or flown for

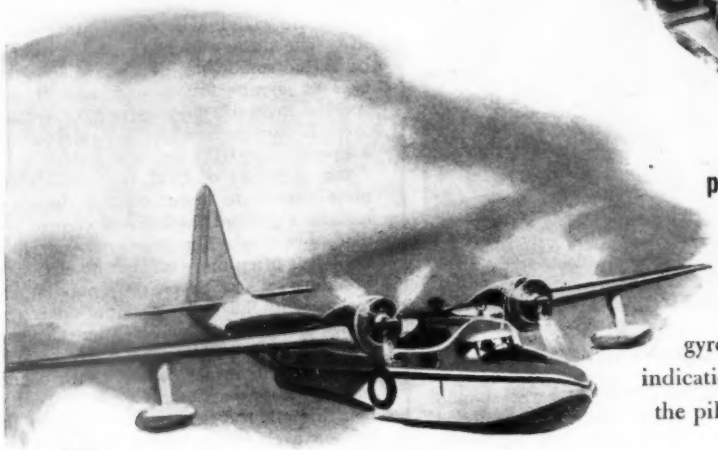
hire must be inspected by a certificated mechanic: (1) daily, (2) monthly, (3) every six months, (4) annually?

6. A pilot departs on a sight-seeing trip, flying a heading of north for one hour, east for half hour, and west for half hour. His airspeed is 75 m.p.h. and the wind is 25 m.p.h. from south. The time required to return to his base is: (1) 1 hr., 30 min., (2) 2 hr., (3) 2 hr., 30 min., (4) 3 hr.?

ANSWERS ON PAGE 91

The Sperry A-12 Gyropilot on executive planes . . .

As the human pilot's automatic "co-pilot" on one-man operated executive aircraft such as the Grumman-Mallard, the Sperry A-12 Gyropilot eases the strain and fatigue of long flights . . . facilitates flying accurately by dead reckoning when busy executives must fly off the regular airways to visit out-of-the-way plants.



provides smoother flight with less pilot effort and greater safety

With the Sperry A-12 Gyropilot and Gyrosyn Compass supplying complete gyro-stabilized control and accurate directional indications under all flight conditions . . . the pilot can do his job better and with less effort than by manual control.

and with greater comfort and relaxation for executives

Passengers land completely relaxed and refreshed from the smooth ride made possible by the A-12 Gyropilot. Its precise automatic control eliminates over-control, "hunting" and "wallowing," holds the aircraft level and comfortable regardless of air turbulence.

• • •

AND IN THE MARINE FIELD, Sperry Gyro-Pilots, linked with Sperry Gyro-Compasses, are providing automatic straight line steering.

Sperry Gyroscope Company, Inc.

EXECUTIVE OFFICES: GREAT NECK, NEW YORK • DIVISION OF THE SPERRY CORPORATION

NEW YORK · CLEVELAND · NEW ORLEANS · LOS ANGELES · SAN FRANCISCO · SEATTLE

transport two or more Type M-10 chemical tanks under the wings or one Type M-33 in the bomb bay. Local factors such as the areas to be sprayed, the type of terrain and expected enemy ground and air resistance determine the preferred type of aircraft.

These factors also determine the number to be employed, the flight interval and the type of formation. The importance of this type of operation in combat cannot be overemphasized. It was in these forward areas that troops were most likely to acquire insect-borne infections.

In rear areas in combat, as well as in peacetime operations when unarmed aircraft may be operated safely, three types of military and transport aircraft are particularly suitable. The B-25 and the C-47 can carry large volumes of DDT solution for spraying many acres without reloading. The Stinson L-5 and the L-4 (Piper *Grasshopper*) are both useful in spraying smaller areas.

Three types of equipment for use in such planes have been service tested both in the United States and in some instances overseas:

1. Pressure-Fed Spray Nozzle Type. Small lightplanes with an indicated air speed of less than 150 m.p.h. produce a slip stream insufficient for breaking up spray particles into suitable sizes without use of pressure-fed spray nozzles. This principle was used in the Husman-Longcoy spray unit, the first airplane spray equipment for DDT. It consists of a 25-gallon tank mounted in the rear cockpit of an L-4 and connected through a wind-driven herringbone pump to a boom with six impactor jets. This boom is located along the edge of a venturi fastened to the plane's belly. To produce a spray with finer particles and better distribution, this equipment was refined for the L-5 through the cooperative efforts of the Orlando Laboratory, U. S. Department of Agriculture, and the Air Proving Ground Command. This equipment consists essentially of a 42-gallon tank mounted in the rear cockpit. It is connected to a breaker bar dispenser by an oil-resistant hose line which passes through a propeller-driven herringbone pump mounted on the left strut. A breaker bar mounted under each wing of the plane consists of a boom of steel tubing four feet long with 40 holes spaced a quarter-inch from the spray openings. Optimum conditions for operating either type of equipment are an altitude of 40 to 100 feet above the ground or tree tops, an indicated air speed of 90 to 100 m..p.h., and a three to 10 m.p.h. hour crosswind.

Breaker bar equipment has been adapted for other slow-speed planes, including the L-4B and the PT-17 (Boeing *Kaydet*). The increased pay load of the latter (60 gallons of solution) makes it particularly efficient for this work. More recently the R-4 helicopter has been used with similar equipment by the Navy, and the R-6A helicopter has been tested by the AAF.

2. Gravity-Fed Discharge Pipe. This equipment is to date the simplest and most practical development for dispersing DDT from aircraft with indicated air speeds in excess of 150 m.p.h. Higher speeds provide sufficient slip stream to break up the spray and result in effective dispersion without the aid of auxiliary equipment. This apparatus was a joint development of the National Defense Research Council and the AAF.

B-25 spray tanks will hold 565 gallons. The standard fixed bomb bay tank connects with a standard droppable bomb bay tank. Streamlined discharge pipes have calibrated apertures—making it possible to select the pipe which is able to deliver the required volume of any given insecticide.

The C-47 equipment consists of a 625-gallon tank with essentially similar discharge equipment.

Spray missions with these larger planes achieve best results when flown at an altitude of 150 feet above the ground or tree tops, an indicated air speed of 200 m.p.h. for the B-25 or 170 m.p.h. for the C-47, and when the wind velocity is three to 10 m.p.h. Also desirable are lines of flight 100 yards apart, and flight paths within 22° of crosswind.

Prop With A Twist

UNCONVENTIONAL "S"-shaped propeller on Belgian-owned Piper *Cub* is claimed to cut down noise substantially. Unusual shape reduces tip speed, say designers. The propeller (which is installed on at least two Belgian airplanes) was displayed at an air show in Belgium.

The essential role of the large pay load plane in spraying has not been determined. It will depend largely upon a detailed operational cost analysis of both large and small planes. For military uses, however, the C-47 and the B-25 were practical for spraying areas in excess of two square miles, especially where the areas to be sprayed were far from airports and necessary supplies.

3. Exhaust Generated Spray. This equipment is used on both small and large aircraft. The large plane equipment consists of a generator, which is a venturi attached to the exhaust manifold on the engine. The venturi produces a higher velocity in the exhaust gas stream by constricting it without putting undue back pressure on the engine. Liquid is fed into the throat of the venturi by an orifice which serves as a nozzle. Sufficient pressure is employed to get the liquid away from the wall of the venturi and into the high velocity gas stream. Exhaust generated spray equipment for smaller planes is somewhat simpler and feeds the spray solution by gravity from the tank to the exhaust generator. Missions with the equipment follow the same pattern as with other types of equipment discussed except that sprays should be dispensed from tree-top level for best results.

In general a five per cent solution of DDT (weight volume) in No. 2 diesel fuel oil is employed. However, through the use of concentrated solutions, the ultimate ground area which can be covered by a given flight can be greatly increased. The use of a 20 per cent DDT concentrate at one-quarter the flow rate of the five per cent solution gives comparable results. In the future other DDT carriers such as concentrated DDT emulsions and water dispersible or so-called "wettable" DDT will come into general use. The dosage of DDT per acre must be varied somewhat, dependent upon the type of terrain, foliage and cover, insect species involved and certain other factors. This dosage ranges between 0.3 and 0.6 pounds of DDT per acre.

Air dispersal of DDT is not the complete answer to insect control. In many instances ground methods of control are more practical. For permanent installations it is often more efficient to eliminate breeding sources or to spray building interiors with DDT for residual effect. In many respects, however, the airplane spraying of DDT does have a very dramatic role in insect control work of the future. It is particularly adaptable for "putting out the fire" when mosquito- or fly-borne epidemics occur. One airplane application of DDT should greatly reduce the danger of mosquito-borne diseases for 21 days or more, unless infiltration of infected mosquitoes occurs. Planes can probably be used to wipe out early seasonal mosquito larvae populations over wide areas. Other uses include the treatment of areas inaccessible for ground control methods or where manpower is scarce.

Development of more efficient equipment, the use of DDT spray concentrates of 20 per cent and higher, and the development of water-dispersible DDT all add to the possibilities of spraying from airplanes.

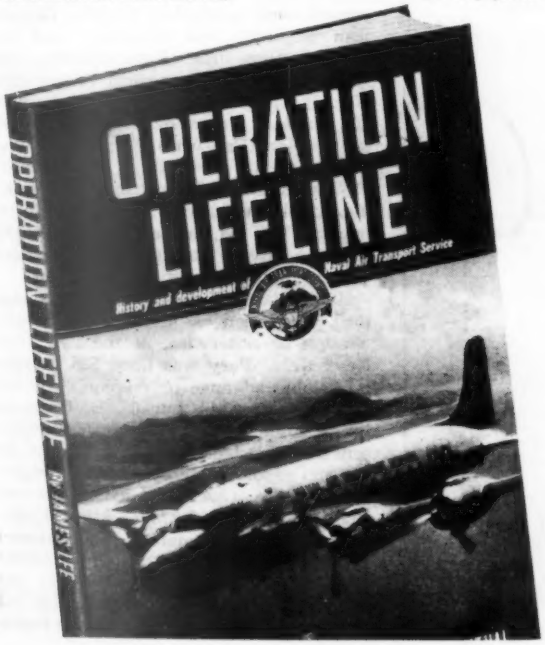
But the new air war is just beginning. With peace and military occupation by U. S. Forces, great areas of the world—previously pestholes of malaria, filiariasis and dysentery—can be made fit for white man's habitation. For years to come this war against the insect should provide employment for pilots, entomologists, and malariologists. Hundreds of now obsolete warplanes can easily be important agents in the work which, when completed, may change the entire social geography of the world. END

THE STORY OF THE NATS IN WORDS AND PICTURES

Operation Lifeline

Text by Ace Correspondent James Lee
Photographs by Joe Rosenthal

One of the greatest stories to come out of the war is this dramatic and personalized history of the Naval Air Transport Service. It is handsomely produced; contains 28,000 words of text; more than 150 striking color and black and white photographs. And it is a record of achievement without parallel in the history of aviation, a tribute to great deeds performed under tremendous difficulties. Price, $5.00



"The story of the NATS is told most graphically in *Operation Lifeline* . . . James Lee and Joe Rosenthal's five week air tour of Pacific bases resulted in a distinguished album of startling, effective photographs, a comprehensive story of the war record and future plans of the NATS . . . Many of the illustrations have deep pictorial beauty; moreover, cameraman Rosenthal has thoroughly pictured all the key operational activities."—*San Francisco News*

"Details the part of aviation in the victory of the Pacific . . . Lee's fluid style makes easy and interesting reading and Rosenthal's pictures are a story in themselves."—*Newark Call*

"A handsome volume . . . will have special interest for those who were in the service as it doesn't minimize their truly notable achievements."—*Los Angeles Times*

"The story of the Naval Air Transport Service and what it did in the global war is particularly notable for the richness of its photographic illustrations by Joe Rosenthal and lucid text by James Lee."—*St. Louis Globe-Democrat*

Order Your Copy of OPERATION LIFELINE today

Use the convenient coupon below

ZIFF-DAVIS PUBLISHING COMPANY, Dept. F-1247
185 N. Wabash Avenue, Chicago 1, Illinois

Please send me.....copies of OPERATION LIFELINE @ $5.00 per copy. I have enclosed ☐ Check ☐ Money order

Name .....

Address .....

City & State.....

(Your copy will be sent postage prepaid)

West Indies Air Cruise

(*Continued from page 40*)

ing fees, immigration, health and customs fees, eating, overnight accommodations, taxi fares into town, everything. It was quite a jolt. Ted's direct expenses had been well over $1,000.

We made a list of necessary equipment and bought as much of it as possible from War Surplus outlets. There was virtually no item that we did not use except chutes, life rafts and Mae Wests, nor was there any dead weight. Our most important items were the following:

Two parachutes, 40 pounds; one-man life raft with emergency equipment, 32 pounds; two Army lightweight sleeping bags with mosquito netting, 13 pounds; two emergency vests with rations, flares, chocolate bars, pistol, fishing kit, compass, etc., 12½ pounds; two Mae Wests, six pounds; three Thermos bottles, six pounds; tools, wrenches, spare plugs, screw drivers, safety wire, 15 pounds; spare Airboy receiver, four pounds; movie and still camera equipment, 35¼ pounds; personal equipment and crew, 404 pounds; total: 667 pounds.

AAF planning charts are available through CAA for the whole route but the AAF strip charts from Miami to Rio are far better. The various countries require visas, passports, etc., prior to entry. Each has its peculiar requirements. Brazil, for instance, requires (1) proof of U.S. citizenship; (2) a letter from the local chief of police stating that you have no criminal record; (3) a letter from an M.D. stating that you have no communicable diseases; (4) proof of smallpox vaccination within the past 30 days; (5) that you personally appear at the Brazilian Embassy or Consulate. Once in Brazil, however, you are given the same freedom you have in the United States.

In Cuba, on the other hand, the customs requirements are low but the fees are high. You must obtain advance cable permission from the Cuban consul in the States to the Cuban military, to land at an airport which they specify, and the permission is void if the flight has not been made within six hours of the specified time, and must be renewed. In our case (Key West to Havana) this is a $17.93 process if all goes well. My telephone bill for January was $70.33, mostly because of frequent person-to-person calls to Washington trying to get advance clearance for a flight to Antigua and British Guiana.

Throughout this trip we were to rely to a large extent on friends and acquaintances we made en route. For instance, F. W. Wolfinger, a radio amateur, W2CNA of Binghamton, established radio contacts on the 20-meter phone band with numerous amateurs all along our route. He kept a log of our position and flying time which was as accurate as our own.

We took off from Binghamton on Sunday, February 9, in a snowstorm. Fifty miles south, however, we were clear of the storm and in CAVU. Our flight south was uneventful and we arrived at Miami the following day.

I am a research physicist at Ansco and one purpose of our trip was to test Ansco color film for color balance with latitude. I photographed a test chart every 10° latitude under standard conditions and these were analyzed before processing. Conditions were to be ideal, for we had bright sun every day.

We took off Thursday morning from Key West after having arranged permission to fly to Rancho Boyeros Field near Havana. We actually kept two-way voice contact all the way across—105 miles at 50 to 100 feet altitude with the standard GE transceiver and fixed eight-foot antenna. However, we flew into a few local rain squalls in one of which our engine vibration increased noticeably. The most picturesque scene of our trip was the Cuban coast as we flew into Havana, beautiful blue-green and deep blue water, bright green foliage, white buildings, fairy-tale cumulus clouds and a deep blue sky.

"We still have one little structural fault to remedy . . ."

Our first realization that we were in a foreign land was when the Boyeros tower acknowledged our radio call with "Steenson two seex zeero . . ." We had very "leetle" trouble understanding them.

We saw a bit of Havana night life while at Boyeros trying to locate our vibration trouble. I was sure it was due to prop-warping and we tried unsuccessfully to have a prop flown over from the States. So on Saturday, February 15, we made the easy 300-mile flight to Camaguey—a pleasant city in Central Cuba. The engine continued to run slightly rough so we cruised at 2150 r.p.m. instead of our usual 2250 r.p.m. or the factory-recommended speed of 2475.

We had met Capt. and Mrs. Pery Igel at Boyeros. They were ferrying the first *Navion*, identification serial PP-RZE, to Rio. The Igels were young, good-natured Brazilians and very good company. Pery had trained in Texas and had several thousand hours as Army pilot in DC-3's over Brazilian jungles. We "rendezvoused" as Camaguey. Pery was having troubles with his engine and hydraulic system. Food and hotel facilities were excellent and inexpensive at Camaguey but they had been of mediocre quality and very expensive in Havana.

Sunday we set out for San Juan, P.R., via Port au Prince, Haiti, 400+ miles. We flew a direct route and at Guantanamo we contacted the Navy radio and got on the southwestern leg of the range which is directed at Port au Prince. At Port au Prince (about 1800) we again saw the Igels, who had continued to have trouble, and we took off for San Juan.

By the time we reached the extreme western tip of Hispaniola it was growing dark and I saw what appeared to be a line squall ahead. Furthermore, we did not have any range voice reception at that point and had not obtained any recent weather reports. Therefore we turned back to Ciudad Trujillo, Dominican Republic, not knowing what we were getting into. Upon arriving we were greeted by a swarm of assorted officials who fleeced us of $50 in the first 10 minutes. Some of the excuses: $5 landing fee (Pan Am.); $3 surcharge for night landing (Pan Am.); $10 customs; $10 immigration; $5 health; $10 for making out the necessary (40 sheets) official papers. We did, however, again enjoy the company of the Igels, and the next day we both took off for San Juan.

Having been given advance (Washington) permission we suffered no charges, landing or otherwise, at the San Juan Navy field. Pery was fined $25 because he had no advance permission. The red tape, however, in our U. S. Customs, Immigration and Quarantine was unreasonable. The Igels arrived soon after we did and reported increasingly bad engine performance (ours had continued unchanged). Through Mrs. Alicia Rodriguez, a radio amateur, I contacted W2CNA, Binghamton, with excellent clarity, and we talked via radio and telephone extension to wife, mother and father for nearly an hour from the Rodri-

Calling all buyers

FIRST RATE AIRCRAFT COMPONENTS

From coast to coast, WAA Approved Distributors are selling choice, unused Aircraft Components at prices that are right. Thousands of general replacement parts, hardware items, tires and tubes, engines, engine parts, etc., are being offered.

These long-established Approved Distributors were selected by WAA on a basis of their recognized position in the aircraft industry, technical "know-how" and their ability to serve you efficiently. Write, phone or visit your nearest Approved Distributor and learn more about the variety and quality of the equipment which is available.

For your convenience, these Distributors are listed below. The numerals and letters indicate the type of equipment offered.

SAVE THIS ADVERTISEMENT

—IT SERVES AS A BUYER'S GUIDE

Abrams Instrument Co.
606 East Shiawassee Street
Lansing 5, Michigan
(aircraft cameras)

Aero Bolt & Screw Co.
1815 Webster Avenue
New York 57, New York
and—2457 Enterprise Street
Los Angeles, California
(6)

Air Accessories, Inc.
P.O. Box 1326
1400 Henderson Street
Fort Worth 1, Texas
(1,2egh,5,6,10,11,12)

Air Associates, Inc.
Teterboro, New Jersey
and—416 Admiral Blvd.
Kansas City 6, Missouri
(1,6,10)

Air-America Supply Agency
1732 Eye Street
Washington 6, D.C.
(general—export only)

Aircraft Components Corp.
602 Montgomery Street
Alexandria, Virginia
(1,10)

Aircraft Engine and Parts Corp.
53 Park Place
New York 7, New York
(4xx)

Aircraft Hardware Mfg. Co., Inc.
810 Edgewater Road
New York 59, New York
and—2344 East 38th Street
Los Angeles 11, California
(1,6,11,12)

Aircraft Steel and Supply Corp.
415 North Water Street
Wichita 1, Kansas
(1,2e,11)

Air-Parts, Inc.
723 Sonora Avenue
Glendale 1, California
(1,3,4y,7,11,12)

Frank Ambrose Aviation Co.
39-01 Main Street
Flushing, L.I., New York
and
Oakland Municipal Airport
Oakland, California
(1,2g,10,11,12)

Aviation Activities, Inc.
1822 Republic Bank Building
P.O. Box 363
Dallas 1, Texas
(2j,4xx)

The Babb Co., Inc.
1007 Airway
Glendale 1, California
and—444 Madison Avenue
New York 22, New York
(1,3,5,9,10,11,12)

Chicago Airmotive Corp.
11 Industrial Rd.
Hammond, Indiana
(1,2ce,9,10,11,12)

Clary Multiplier Corp.
1524-90 N. Main Street
Los Angeles 12, California
(6)

Cobell Industries, Inc.
P.O. Box 966
401 South Lake Street
Fort Worth 4, Texas
and
North American Plant
Grand Prairie, Texas
(2g,3,4uyz,5,9,11,12)

Collins Engineering Co.
9041 Lindblade Street
Culver City, California
(6)

Douglas Aircraft Co., Inc.
Santa Monica, California
(2g)

Dumont Aviation & Supply Co.
1300 East Palmer Street
Compton, California
(6)

Durham Aircraft Service, Inc.
Northern Blvd. at Prince St.
Flushing, L.I., New York
and—Hangar #3
2000 North Memorial Drive
Tulsa, Oklahoma
and—2821 Brooklyn Ave.
Detroit, Michigan
(1,5,6,7,12)

Eagle Parachute Co., Inc.
933 East Orange Street
Lancaster, Penna.
(9)

Eighth Air Depot, Inc.
Hendricks Field
P.O. Box 507
Sebring 1, Florida
(1,2c,3,9,12)

Florida Aviation Corp.
Drew Field
Tampa, Florida
(1,2g,4fu,6,9,10,11)

Globe Industries, Inc.
44 West 44th Street
New York 18, New York
and—1431 Oregon Street
Berkeley, California
(1,9,11,12)

Goble Aircraft Specialties, Inc.
40-22 Lawrence Street
Flushing, L.I., New York
(1,4xx,9,12)

Hartwell Aviation Supply Co.
3417 Crenshaw Blvd.
Los Angeles 16, California
(electrical supplies)

C. J. Hendry Co.
27 Main Street
San Francisco, California
(6)

G. W. Holmes Co.
196-208 East Gay Street
Columbus 15, Ohio
(1,4fwyz,9,10,11)

Jack & Heintz Precision Industries, Inc.
Cleveland 1, Ohio
and
Solon Road
Bedford, Ohio
(7)

Lamson & Sessions Co.
1971 West 85th Street
Cleveland 2, Ohio
(6)

Lodwick Industries
Lodwick Airport
Lakeland, Florida
(3,9,11,12)

S. A. Long Co.
232 North Market Street
Wichita 1, Kansas
(1,6,7,11)

Maxwell Associates, Inc.
15 Moore Street
New York 4, New York
(1,4z,10)

New Mexico Aircraft Sales, Inc.
P.O. Box 157
West Mesa Airport
Old Albuquerque, New Mexico
(1,8,10)

Pacific Airmotive Corp.
2940 North Hollywood Way
Burbank, California
and
1628 McGee Street
Kansas City 8, Missouri
(1,3,4fuvxz,6,7,9,10,11,12)

Page Airways, Inc.
Municipal Airport
Rochester, New York
(1,2e,4fu,10,11)

Clarence E. Page
Hangar #3, Municipal Airport
Oklahoma City, Oklahoma
(1,2ce,3,4u,10,11,12)

Parker Service Agency Division
The Parker Appliance Co.
17325 Euclid Avenue
Cleveland 12, Ohio
and
6506 Stanford Avenue
Los Angeles, California
(6—Parker fittings)

Piedmont Aviation, Inc.
Smith-Reynolds Airport
Winston-Salem 1, North Carolina
(1,4u)

Pioneer Parachute Co., Inc.
Forest Street
Manchester, Connecticut
(9)

Ranger Aircraft Engines
Div. of Fairchild Engine and Airplane Corp.
Farmingdale, L.I., New York
(4y)

Reid & Cook, Electrical Contractors
911 Walla Walla Avenue
Renton, Washington
(1,6,8,10,11)

Resort Airlines, Inc.
P.O. Box 1301
Southern Pines Airport
Southern Pines, North Carolina
(1,2e,10,11)

Schneck Engine Service & Supply
Washington Park Airport
Homewood, Illinois
(1,2h,4uy,10,11)

Schuster Electric Co.
321 Sycamore Street
Cincinnati 2, Ohio
(electrical supplies)

Snyder Aircraft Corp.
5036 West Sixty-third Street
Chicago 38, Illinois
(1,4f,7)

Thor Solberg Aviation Co.
Solberg-Hunterdon Airport
Whitehouse, New Jersey
(1,2h,10,11)

Stance Company
1914 Canton Street
Dallas 1, Texas
(6)

Standard Parts & Equipment Co.
904 North Main Street
Fort Worth, Texas
(1,6,8,11)

Supply Division, Inc.
Lambert Airport
Robertson, Missouri
(1,6,7,9,11)

United Aero Service, Inc.
P.O. Box 1028
Delta Air Base
Charlotte, North Carolina
(1,2bceh,4fuz,7,10)

United Services for Air, Inc.
Box 409
Niagara Falls, New York
(2f)

Van Dusen Aircraft Supplies, Inc.
2004 Lyndale Avenue—South
Minneapolis 5, Minnesota
(1,4uwy,6,9,10,11,12)

Wallace Air Service, Inc.
P.O. Box 2203
Felts Field
Spokane, Washington
(1,2ce,4fuw,10)

Woodward Bros. Co., Inc.
9175 East Douglas Avenue
Wichita 1, Kansas
(1,6)

KEY TO SYMBOLS

1. Accessories
2. Airframe Parts
   - (a) Aeronca
   - (b) AT-19
   - (c) Beech
   - (d) Boeing
   - (e) Cessna
   - (f) Curtiss
   - (g) Douglas
   - (h) Fairchild
   - (i) North American
   - (j) PBY
3. Engines
4. Engine Parts
   - (t) Continental
   - (u) Jacobs
   - (v) Kinner
   - (w) Lycoming
   - (x) Pratt & Whitney
   - (y) Ranger
   - (z) Wright
5. Ground Handling Equipment
6. Hardware
7. Instruments
8. Miscellaneous
9. Parachutes
10. Propellers
11. Tires and Tubes
12. Tools and Test Equipment

OFFICE OF AIRCRAFT AND ELECTRONICS DISPOSAL

WAR ASSETS ADMINISTRATION

1375

guez home. This was one of the biggest thrills of the trip.

The next few days were spent trying to obtain clearances to land at Antigua, Trinidad, and the Guianas. Strangely enough, although we naturally needed no special permission to land at U. S. possessions nor to land at British airfields on British possessions, our 99-year agreement covering U. S.-leased British possessions is written so as to specifically exclude "private" flights. However, through the kindness of some officials who saw the unreasonableness of this restriction, we were eventually cleared for the rest of the trip.

The flight to Antigua, although 300 miles, mostly over water, was simple because of the powerful SABA radio beacon and Coolidge radio range. We could obtain an accurate loop fix on SABA throughout the whole Indies. At San Juan, Pery had sent his wife on to Rio by Pan American, due to the past strain and prospective hazards of the trip. When we met at Coolidge he decided not to go further until his engine trouble was corrected. The Army mechanics worked on the engine and during a test flight over the field the oil pressure suddenly cut out completely. His motor failure was a pulverized piston ring which had scoured the cylinder. We were put up at the officers barracks, and we ate at the officers mess. It was ideal, clean and comfortable. Pery decided to go on by Pan American and leave his *Navion* there.

On Saturday, February 20, we took off for Trinidad via Beane Field, St. Lucia. All went well until we were about 60 miles off Trinidad. At this point we both simultaneously noticed that the engine began to run decidedly rougher. We decided to high-tail it for Grenada, marked on our maps about 20 miles due east, as an emergency field. It had a radio beacon which made homing simple. The strip was about 4,000 feet of paved runway and used twice a day by British West Indies Airways for *Lodestars*.

Unlike Trujillo there were no customs fees or any other fees whatsoever, but a native wanted $20 each way to take us to St. Georges where there was the only hotel on the island. Ham couldn't see it so we went into the native town of Grenville where we saw indescribable filth. However we got some bananas for a penny apiece, and woven hats. That night we slept under the plane after eating some emergency rations for supper.

Sunday morning we dressed down the distributor points and checked the magnetos. Realizing at this point that we probably had valve trouble, we decided not to go on farther toward Rio but to return. Sunday afternoon found us back at Antigua with Pery. He left Antigua early the next morning via British West Indies Airways.

Monday we flew to San Juan where we had a bit of explaining to do to the quarantine officer because we had not immediately cleared him but had gone over to the Naval Operations office first. We flew direct, 420 miles, from San Juan to Port au Prince and repeated the fleecing to which we had by now become accustomed. However, we did manage to overfly Trujillo. The same afternoon we flew on to Guantanamo and landed at the commercial field there.

One of Wolfy's best radio friends is Art Pepper, manager of a large sugar plantation southwest of Camaguey. Through Wolfy we had been urged to stop at Art's, so we phoned him from Guantanamo and learned that he had his own landing strip.

We arrived at Jobabo at 1400 Thursday afternoon and were met by Mr. and Mrs. Pepper and their daughter-in-law Mrs. Schmidt of Ohio. Their hospitality was wonderful to behold. They had already scheduled a chat with Binghamton for 1500 so we had lunch and with drinks in hand we relaxed in Art's so called "shack" and talked for about an hour with Binghamton. That afternoon and Friday we inspected the sugar mill and plantation. After a small banquet we bid farewell and flew to Camaguey.

At 1700 we took off from Camaguey for Miami, about 350 miles distant—300 of it over open water. It was very hazy and in the darkness, since there was no horizon, we were on instruments nearly all the way. But after once establishing our compass heading we had no trouble staying on the Miami radio beam. At Miami International Airport our troubles really began. Of course, a fee was charged by some officials because we arrived after 1700. Furthermore, although in all of the countries we had entered and left, including the U. S. (and Puerto Rico twice), we had never actually had our plane or its contents even casually examined, Miami customs announced that we would have to remove all of the contents from the plane and bring them into their office to be examined. This was quite a chore and seemed inconsistent.

Our trip from Miami back to Binghamton was marred by a couple of storms which delayed us. A wind storm at Tampa bashed our left wing tip and bent an aileron when the plane was tied down at the airport there but it continued to fly satisfactorily. When we finally approached Binghamton there was three feet of blowing snow, drifting snow, snow on runways, and on top of that it was snowing quite hard. We found the airport just as we left it.

Here are some of the things we learned on this trip that will save other pilots much trouble:

1. Contact the embassy or consulate of every country you plan to visit and make sure you learn (a) the airplane crew and cargo clearance procedure in detail, including cost and length of time the clearance is good for; (b) restrictions on tourist flights after you are in the country; (c) credentials you will require, such as visa, health certificate, certificate of financial responsibility, lack of criminal record, etc. If possible, get all this in writing over the consul's signature.

2. When you enter any country, be sure you have (a) clearance; (b) customs clearance from the country you are leaving.

3. File flight plans. Maintain two-way radio contact as long as possible at scheduled intervals, especially when you are flying over water. Be sure to close your flight plan.

4. In general, do not fly after 1700 unless your pocketbook is full and your nerves are very very calm. Nearly all countries charge heavy fees if you come in at "off hours."

5. Carry suitable emergency equipment.

6. Arrange well ahead of time for non-leaded 80 octane gas. If we had done this we would not have had our engine

SOLOES ON 16th BIRTHDAY

LAST spring Jerry Hueske celebrated his 16th birthday by soloing in four planes—a Cessna 140, Piper *Cub*, Piper *Super Cruiser*, and a Luscombe *Silvaire*. Jerry learned to fly at Hastings Sky Ranch, Hastings, Neb., operated by his father. He started building up dual time when he was 15 and by his 16th birthday he was ready for his unusual feat.

"I realize the value of AOPA... to the private pilot"

As Pilot Bill Dirmann points out, many valuable benefits for the individual flyer are included with membership in AOPA. These free benefits should not be overlooked, but they are only incidental to the real purpose of AOPA.

This great organization of nonscheduled owners and pilots was formed to give private flying a means of protecting its interests and planning for the future —to provide a powerful unified voice for personal aviation which would be heard and respected.

AOPA's record in combating restrictive legislation, and its constructive safety program, is well known to the flying fraternity, while the plans for the future include many measures for making personal flying more useful and more enjoyable.

If you own or fly a plane you are eligible for membership in AOPA, and you are invited to join. Simply use the application form on this page or write for full information; dues are only $5.00 a year. Wear the wings of AOPA!

Here is Pilot Dirmann's letter:

"I am taking this opportunity to express my gratitude to the AOPA for its work in the handling of airport landing fees, excess licenses, first-hand news on such devices as the stall warning indicator, current civil air regulations, and many others too numerous to mention. In the short time I have been a member I realize the value of AOPA to the private pilot such as myself.

"I am looking forward to renewing my membership every year as long as I am able to fly."

BILL DIRMANN
AOPA Member Pilot No. 26273

Valuable AOPA Services FREE to Members

The Washington staff of AOPA will help you in personal flying problems, licenses, regulations, legal tangles, plane sales and purchases, documents, employment. Also national AOPA-Hertz Drive-Ur-Self courtesy card with special rates; AOPA Washington Newsletter; each month the special AOPA edition of FLYING magazine; TWA-AOPA courtesy card assuring service and maintenance facilities at most TWA airports; advantageous aviation insurance service; low cost aircraft finance service; distinctive AOPA pilot's wings, emblems for your plane and car, and membership card. Above all else, AOPA continuously protects and fights for your flying interests in government and other circles.

"AOPA"
AIRCRAFT OWNERS AND PILOTS ASSOCIATION

AIRCRAFT OWNERS AND PILOTS ASSOCIATION
National Headquarters, Dept. F-1247
Washington Bldg., 15th and N.Y. Avenue, N.W.
Washington 5, D.C.

I first soloed an airplane at.....in the year.....

I own aircraft NC.....Make.....
I hereby apply for membership in AOPA.
Enclosed find check or money order for.....
(U. S. A., Canada, Mexico, Central & South America, $5.00; All other Foreign, $6.00.)

NAME.....
Please Print

ADDRESS.....

CITY & STATE.....

PILOT LICENSE NUMBER.....

SIGNATURE.....
$1.80 of each year's dues are for my subscription to the AOPA Edition of FLYING

ALL WINTER FLYING

NEW FLYING PLEASURE

NEW FLYING HORIZONS

GREATER FLYING SAFETY

with

FEDERAL

ALL-METAL

Skis

● **Reach new places you could never reach before. Enjoy the perfect flying hours of winter weather. Fly to fish—fly to hunt—in perfect safety, because every field or lake is a landing field. Fly all winter with Federal tested and approved all-metal Skis!**

Manufactured Since 1925.

Every Field A Landing Field

FEDERAL

AIRCRAFT WORKS

MINNEAPOLIS 12, MINN. U. S. A.

See YOUR FEDERAL SKI DISTRIBUTOR or Write for Free Literature on Skis to Federal Aircraft Works, Dept. F, Minneapolis, Minn.

trouble and would probably have reached Rio. Do this at each airport you expect to visit.

7. Choose an all-metal plane which preferably has a cruising range of 1,000 to 1,500 miles, speed of well over 150. With longer range we could have flown over the stops which were expensive and troublesome. As to the all-metal requirement. the sun bleached the NC markings off the top right wing. Fabric life down there is only one year if tied down. The inside temperature rose to 150° when we left the plane closed at San Juan field.

All in all we flew approximately 8,000 miles in 80 hours of flying. Our average fuel consumption was only eight gallons per hour and oil consumption was negligible. Our accommodations cost about $200 for the trip and our total expenses directly attributable to the trip came to about $700 apiece—a total of $1,400.

Despite the expense and the difficulties, we want to assure you that you can have more fun than you ever had before. Hamilton and I are learning Spanish and we will be looking for you on your way to Rio next March. END

Flying Club of the World

(*Continued from page 22*)

the club, Rene Latore, a member of the Palestine mission, was first to solo (in two months). Major Eisenhardt was next, followed by Rosenberg and Sandford Major of the U.S. Miss Jean Rimoldi, U.S., was the first girl member to solo.

Only a few club members had flown before. They included Tony Coke and Ronald S. Hall, former RAF test pilots; Hilda Yen and Gerald Wen of China; Louis Mayan and Hortense Powell, U.S., and Henry Hudson of England, the club president. Another veteran flyer is Gerard O'Rooney, a native of Northern Ireland and 1,500-hour pilot in World War I in the Royal Flying Corps. For service in the Mediterranean, he won the Distinguished Flying Cross. Diplomatic service with the League of Nations forced him to give up flying but now he hopes to regain his license.

With only verbal publicity, membership has increased to nearly 60 members in the heterogeneous organization of 3,000 staff employees.

Their jobs at Lake Success range from ordinary office positions to exciting and unique responsibilities. Jean Herbert of France, author of several books on the philosophy of India, is chief of interpreters and speaks nearly every European dialect. Gerald Wen, who trained for the Chinese Air Force after being graduated from the University of Nanking, is a liaison officer and an expert on U.N. procedure in general sessions. Donald Sanford, U.S., handles the recording of speeches at U.N. sessions. Ormond Abbott, wartime agent for the Army's Criminal Investigation Division, records all the official documents of the U.N. Maj. Gen. Frank E. Stoner, former chief of Army communications, is now head of the U.N. radio division with Sandford Major, U.S., as the division's technical supervisor. Ronald Hall, the ex-test pilot, is a verbatim reporter and gets as close to Delegates Warren Austin (U.S.), Andrei Gromyko (U.S.S.R.), Alexandre Parodi (France), and Sir Alexander Cadogan (Great Britain) as any outsider could.

Stanislaw Kwasniewski, 19-year-old Polish boy, handles supply for the languages division. Vladimir de Grave of France works for Simultaneous Interpretation Service and can reel off an interpreted speech in French just as it is delivered in Russian by a Soviet delegate.

Many have fascinating war records. Marcel Maillard, a short, sturdy Frenchman, was a cavalry major at the outbreak of the war. During a Nazi invasion he was captured twice and escaped twice within a month (May and June, 1940). After the French surrender he worked for Vichy as a commissioner of French labor youth and helped many youngsters to escape to North Africa. Later he was transferred to the railway police and organized an underground group that supplied details of German troop movements to the Allies. He became suspect by the Gestapo, was arrested, and in August, 1944, was condemned to death. But the Allied invasion was so close that he was moved to Buchenwald. Later a group of 5,000 prisoners was transferred to Dachau. At the end of 16 days only 800 had survived, Maillard among them. On May 1, Maillard again escaped to the American forces in Bavaria.

Jacques Francois of France and Margaretta Klason of the Netherlands also served in the undergrounds of their nations. Miss Klason, who was reared in the East Indies, worked in Holland for "B.E." (Inland Information), a secret organization which helped several score Allied air crews to escape to France. Francois helped them get further to safety. He later was an interpreter with the RAF in Germany.

Ed Lyons, director of the school, and Jim Rogers, his chief pilot, are the principal instructors at the flying and ground school. The school is on the south shore of Long Island, about 20 miles east of Lake Success and one mile southeast of the Republic Aviation Corp. plant at Farmingdale. It is the second largest G.I. school in New York State (largest being at Westchester County Airport). Lyons can grant CAA licenses for private, commercial, multi-engine land and sea categories. He can also instruct for flight instructor's rating and airline pilot's ticket. The school has 11 full-time instructors.

Rates are $8.50 and $11.50 solo and dual for *Cubs;* $15 and $18 for the school's Fairchild, Stinson and *Seabee;* and $45 per hour for Cessna T-50's and *Widgeons.* Hangar fee runs $25 per month for light planes and $10 for monthly tie-down. Overnight tie-downs are free.

The field is about 90 minutes from Times Square by Long Island Railroad, subway, taxi or bus. Special room rates for students at Lindenhurst's Washington Hotel are $2 per night or $6 to $8 per

week. Emily's Coffee Shop on the field provides better-than-average meals.

When diplomatic squabbles grow heated in the Lake Success halls, there's tangible proof only an hour's ride away that the "little guy," regardless of nationality, can cooperate successfully.

END

Diary of an Airport Operator

(*Continued from page* 38)

operator who services his plane for profit—and the understanding has to be vice versa.

That's why I've kept this seven-day diary on my operation, Skyservice, Inc., at Staten Island Airport, N. Y. Skyservice is a source of income for at least 19 men, including executives, flight instructors and mechanics—and more if we include landlord and airplane and parts manufacturers. Here's a one-week aviation picture—from the front office:

MONDAY

Weather was perfect yesterday. We had a total of 69 hours of flying before twilight closed the field. Bob Lynch (general manager and accountant) just finished making all the entries for the week-end, which takes care of his "blue" part of every Monday. Yesterday's gas and oil receipts totaled $178.40.

Students out early this morning with everyone on time for a change. Ed Bennett (operations manager) reported 158 GI students and 371 private students on the school roster.

The lone 11 a.m. mail delivery was a disappointment. A couple of big checks for export items are overdue, but bills, mail and magazines are on time—bills to Lynch, reading matter to me.

Phone calls galore. One character in Bayonne, just across the water in New Jersey, wanted to know how the weather looked from here because he wanted to come out and get some flying time. His view of the sky is the same as mine, but he wanted to make sure. Some radio station could get lots of regular listeners around here with a dependable morning report on airport and weather conditions for private flyers.

Truck hauled in a battered *Ercoupe* that made a bonehead emergency landing on a Jersey farm yesterday. Just got it unloaded when the owner phoned and wanted to know whether the parts were ordered yet. Told him we'd let him know what was needed after the mechanics tore it down for a survey.

Wind direction changed and velocity rose this afternoon. The cross-wind gusts forced us to call off flying for awhile. Late afternoon, though, the weather settled down and the day's total was 42 hours.

TUESDAY

Gas and oil receipts for yesterday totaled $78.72. Winds during the night completely ripped the windsock over the main hangar. We started to replace it and found that the only one available wasn't much better and it also had the name of our former fuel company on it. Put it up anyway and made a note to call the distributor for a new one.

The "gadget guy" called. Hadn't heard from him for about a month. He bought a new *Ercoupe* from us a couple of months back, but it wasn't fancy enough for him. He wanted super deluxe equipment so he hit the war surplus trail. First he bought a new radio with a loop antenna. Then he got a new clock, sensitive altimeter, bank and turn indicator and a Sperry directional indicator. Followed this with a flight-hour meter and an engine hour-meter. Couldn't convince the guy that the gadgets weren't needed for the kind of flying he did. Couldn't disillusion him. I had to call a halt recently when he wanted us to install a new war surplus directional gyro, a gyro horizon and two big venturi tubes with the rest of the stuff.

Today he bubbled all over the place. Everything was installed and he thought he had a classy job. Sort of the little boy "hah-hah" horse laugh. Only he had one little job that no one could fix. The panel was shock-mounted, but still vibrated all over the place.

Ended the day on a good note. Chartered the Stinson for a two-day trip to Pittsburgh at $50 per day. Totaled 47 hours of flying before dark.

WEDNESDAY

Weather looked bad so we called the La Guardia weather office and got a prediction of rain. Managed to get three flights in before the storm and it looked as though 2:35 would be all

AVIATION TRAINING

***keeps pace with* AVIATION**

IN AIR-MINDED MIAMI

Aerial crossroads of the Americas—that's Miami! Here great modern airliners drone overhead while the student works and plays. Here Embry-Riddle students have first hand opportunity to see aviation progress in all branches.

It's always Summer in Miami — ideal for flying. Ideal for recreation, too—fishing, golf, tennis, swimming off palm-lined beaches. What better place for your education in aviation?

The Embry-Riddle School of Aviation has trained more than 28,000 pilots (U. S. Army, Navy, Civilian, Latin American, British, French). Courses are CAA approved, intensive, 100% practical. Immediate enrollment. Mail coupon TODAY for full information.

Authorized training under G.I. Bill of Rights.

Embry-Riddle
SCHOOL OF AVIATION
Miami 30, Florida

Dean of Enrollments—Dept. 54
Embry-Riddle School of Aviation
Miami 30, Florida

Name ..... Age.....

Address .....

City ..... State.....

☐ Flight Training ☐ Aeronautical Drafting and Design
☐ Radio ☐ Design Engineering
☐ Instrument Technician ☐ A & E Mechanics ☐ A & E Refresher

Check One ☐ Veteran ☐ Non-Veteran

MODERN AIRCRAFT DESIGN SCHOOL

STUDY AT HOME AND BECOME AN AIRCRAFT ENGINEER AND DESIGNER

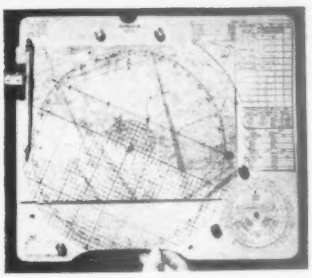
DETAIL DESIGN
ASSEMBLY DRAWINGS
LAYOUTS
DESIGN

MODERN AIRCRAFT DESIGN
BOX 215, PACIFIC PALISADES, CALIFORNIA
Please send your free circular to:
Name_____
Address_____
City_____ Zone____ State_____

HOME STUDY

Take a FLYING HOLIDAY

with this easy, complete navigation packet



1. This all-in-one combined map-holder, plotter, computer, and flight log is really a baby chart table for the small plane pilot. Rests easily on lap—weight 27 oz.
2. It requires no special maps or map rolls. Accommodates standard U.S. Sectional or W.A.C. maps, strip maps too. Measures all mileages and courses on map with a twist of the wrist.
3. It is easy to operate. Gives heading, predicted ground speed up to 70% faster with "graphic wind arrow." Simple, illustrated instructions.
4. $17.95 postpaid—immediate delivery, remit or C.O.D. YOU TAKE NO RISK. 10 Day Money Back Guarantee.

MAPIGATOR, INC.

Dept. B., 136 W. 52nd St., N. Y. 19, N. Y.

(Additional details on request; Dealership inquiries invited.)

our flight time for the day. Gas and oil yesterday brought in $96.20.

The instructors started a black jack game in the lounge after they finished the student records.

Called the fuel company representative to do something about the windsock. He said he couldn't get us a new one for a couple of weeks. I answered, "Our hangar has a bright yellow sock whipping in the breeze right now."

"Hey, wait a minute," he yelled, "*our* windsocks are red."

"We have to use what's available. And this one just happens to have your competitor's name on it in big letters."

A needle helps in this business, and he promised to have a new one over in the morning. Felt fine, like after a big deal, and went out to the shop to see how "Unk" Schaffer (service manager) and his boys were coming with the three annuals. Even rain has its virtues because two of three planes aren't due for a check until next week, but if the work goes fast we might have all three back on the line tomorrow.

The weather never did clear and three flights were total for the day.

THURSDAY

The storm blew out overnight and today's winds were gentle zephyrs. Two of the annuals were out on the line by midmorning and the third goes out as soon as the inspector finishes his work. Having a DAMI (Designated Aircraft Maintenance Inspector) in the outfit would save time and trouble, especially with 16 to 18 outside planes moving through the shop each month for 25 and 100 hour checks and annual re-licensing. Unk's DAMI papers are in process and his appointment should come through soon.

Had a call from the guy who had the crack-up Sunday. He wanted to know whether his parts had come yet and when he could have his plane. He had folded up the nose gear, twisted the engine mount, ripped one wing badly and hadn't done too well by the rest of the plane. All I could say was that our repairs depended on when the factory shipped a new wing—since we had most of the other parts in stock. I expect a daily call from this one from here on out.

The new windsock was delivered and we made the replacement. Ah, these commercial jealousies.

Spoke to two sales prospects, one for an *Ercoupe* and one for a *Seabee*, and arranged for demonstration flights next week.

Total flying time: 51:30 for the day.

FRIDAY

Gas and oil sales yesterday totaled $86.50.

Slight interlude while we called the Erco factory in Maryland to locate missing manuals for a group of *Ercoupes* being crated for shipment to South America. The freight forwarder's usual headache—paperwork and more paperwork. Extra books finally located in an envelope with the manifests, so the shipment was okayed for the docks.

The Busted Birdman called again to check on his plane. I had to make a lot of noise telling Lynch to check the orders. After soothing him, I assured him that the parts would be coming through soon. It takes a lot to convince some people that what takes only one minute of bad flying to smash can require a much longer time to fix.

Flying was excellent along with the weather and we racked up 57 hours for the day. Other things were also normal and some fat checks arrived in the morning for plane deals.

SATURDAY

Another weekend and the sun rose bright and early with no clouds. Gas and oil returned $119.08 yesterday. Another operator offered to trade two used Aeroncas for one used *Ercoupe* and something to boot. It sounds like a good deal. That'll give us Pipers, Aeroncas and *Ercoupes* on the flight line. Along with our Stinson *Voyager*, PT-19 and a Fairchild 24, we'll have a nice spread of equipment. Have to fly down and check the Aeroncas next week.

This time the Busted Birdman made a personal visit, but now that he was able to get a close-up of the damage, he was more willing to be patient.

One visit from a pilot who had just received a bill for repair and replacement work. He complained about being jobbed. Gave him an itemized list and showed him where his plane required extra work. At $2.50 an hour for labor cost, his bill was fair when you figure that some operators in this area charge over $3 an hour for labor. He wasn't happy, but was convinced that the bill was legitimate.

Sixty-four flying hours today.

SUNDAY

Madhouse day and clear weather and the place opened at 7:30, as usual, for Sunday business. Yesterday's gas and oil hit $138.25.

Customers flocked out early this morning and we had 10 instructors on the line for flying. Sunday is money day. A bad Sunday can hurt a good week. The Stinson and Fairchild and two *Ercoupes* carried more than 50 passengers on 15-min. flights over the city before noon at $2 a passenger.

Had to tie up Spotty, the nine-month-old Dalmatian pup, to keep him from getting clipped in the heavy ramp traffic. He has taxi time and it looked as though he was begging for a complete trip, but so far no one has taken him up.

Today all is right with aviation, and we hit the 70th hour on the last flight of the day. Tomorrow we will total our accounts again. END

'Operation Beachhead'

(*Continued from page 27*)

quick conference over a sectional chart and came up with "Operation Beachhead."

This was to be an all-seaplane breakfast flight; something so obviously fitted to the bay-studded western Washington region that it was "about time we thought of it," as Pierce commented.

Plans for "Operation Beachhead" at first consisted of nothing more than a few scribblings on the backs of envelopes. This was strictly not according to tradi-

tion. Breakfast flights are a well-established part of western aviation. But ordinarily they require plenty of preparation, no little ballyhoo and the backing of some organized group.

"Operation Beachhead" depended on something else—the clannishness of floatplane flyers, who are held together by a common enthusiasm and the occasional necessity of wading or even swimming home.

Kurtzer and Pierce enlisted the aid of Ed Kennell, Seattle yachtsman, photographer and enthusiastic amateur pilot, and told him to take over.

From the first the flight was a "natural," Kennell says now. It had a potential attendance of about 50 seaplanes in the Puget Sound area, probably a greater number than in any similar-sized region in the country, Kennell points out.

But no formal invitations were sent out. Kennell simply got on the telephone and polled float base operators in Seattle, Tacoma, Olympia and other points. He named a date and said, "Come on if you get a chance."

Breakfast site was a sloping beach on Dabob Bay at the foot of the rugged Olympic Mountains on the primitive, heavily-wooded Olympic peninsula. Although practically without roads or other marks of civilization, the Dabob area is only about 20 minutes by seaplane from the skyscrapers of downtown Seattle.

Kennell did, he admits, do one bit of planning. It later went awry. He arranged to have his yacht, a 72-ft. sailing schooner, anchored in Dabob Bay off the chosen beach to heat coffee for the breakfast flyers.

The rest of the food was to be flown in from Seattle in a *Norseman* on floats, piloted by Harry Bennett. Chow would be "just 20 minutes off the stove" when it arrived on the beach, Kennell promised.

Then, almost at the last minute, the flight had to be routed elsewhere. The Seattle airways forecast station drew up a synoptic chart and predicted strong south winds for the next day—the day of the hop. This would send heavy swells churning up Dabob Bay, making the area untenable for light seaplanes.

Kurtzer and Pierce took off in a Stinson *Voyager* to scout the Olympic Peninsula's tangled shoreline for a more suitable spot. And they found one, 18 miles north of Dabob—a low, sandy point which promised protection for the seaplanes no matter which way the wind blew.

Promptly at 8 a.m. the following day, the first floatplane buzzed over Kala Point in Port Townsend Bay, the new site. Somnolent seagulls, roosting on the sand, were sent protesting in every direction. They didn't get a chance to settle back.

For in the next hour 34 seaplanes, ranging from Piper *Cubs* to *Seabees* and a *Norseman*, droned overhead, banked down to smooth landings north of the point, and taxied up to the shelving beach. The spot had been well-chosen, since breakfast flyers were able to step from the noses of their pontoons directly to dry sand.

One of the two *Seabees* on the flight dropped its gear and taxied up on the beach. The other, developing hydraulic difficulties, nosed into the beach at an angle and passengers walked ashore over a driftwood "gangplank."

As the light planes taxied to shore a volunteer "flight line" crew signaled pilots in and helped passengers debark. The ships were then turned tail to the beach and tied to imbedded logs or improvised anchorages.

Early arrivals built a roaring beach fire near the tip of the point, and the flyers congregated there as they arrived.

The food plane appeared toward 9 a.m., throwing up a cloud of spray as it settled back off the step when the throttle was cut. With its deep-draft pontoons, the *Norseman* grounded gently offshore, and its passengers had to doff shoes and stockings and wade the last 30 feet through Puget Sound's chilly shallows.

Food bearers sloshed to and from the ship in rubber hipboots and set up a chow line near the beach fire. Then flyers queued up for paper plates stacked with scrambled eggs, hashbrown potatoes and rolls. Coffee was doled out from huge, fragrant pots.

As a promoter, Kennell underrated himself, it proved. He provided food for an estimated 65 persons—and nearly 80 showed up. Late arrivals got rolls and coffee; and later, just rolls, when the cof-

DESIGNED TRAINING WILL EARN MORE MONEY FOR YOU IN AVIATION BECAUSE IT'S . . .

RIGHT FROM THE START!

Every factor in Aero Tech training is **designed** to make you a valuable man in the aircraft industry. Our curriculum is planned in close consultation with executives of leading airlines and aircraft plants, and is progressively revised to include their latest developments in methods and materials.

Neither effort nor expense has been spared to make our training the most effective preparation for an aviation career. We believe that we have the finest training equipment in the United States and that our training methods are the most up-to-date. We urge you to inspect and compare our training with that of other schools.

Even our training schedule is designed for your profit, as **scientific planning concentrates a full school day into the hours between 7:00 a.m. and 1:00 p.m. . . .** leaving ample time for part-time employment. Room and board available at reasonable rates. Approved for veterans' training. Mail coupon today.

AERO INDUSTRIES TECHNICAL INSTITUTE
OAKLAND MUNICIPAL AIRPORT
• OAKLAND 14, CALIFORNIA •

AERO TECH Oakland

O. D. McKENZIE, Pres.: Please send me complete information on Aero Tech training. (F-12)

name address

city zone state age

PILOTS

INCREASE YOUR EARNING POWER!
Get Your
INSTRUMENT and AIRLINE TRANSPORT RATING Now!

Train at AMERICAN FLYERS—the world's largest Instrument and Airline Transport School — and insure YOUR future in aviation. American Flyers has trained more pilots for the Airlines than any other school in the country—MORE THAN ALL OTHER SCHOOLS COMBINED!

If you want the most modern and efficient flight instruction—whether you are a veteran or civilian pilot —write to us for our free booklet outlining the courses we have to offer.

VETERANS— Your certificate of eligibility from the Veterans Administration is all you need to enroll at government expense for any of our courses under the G.I. Bill of Rights!
Courses start at any time—no waiting!

AMERICAN FLYERS

MEACHAM FIELD FORT WORTH 6, TEXAS

MAIL THIS COUPON TODAY

Please send me FREE Booklet F and data on
☐ INSTRUMENT ☐ AIRLINE TRANSPORT ☐ CIVILIAN ☐ VETERAN

NAME_____

STREET_____

CITY_____ STATE_____

When convenience counts...

and comfort is important you'll appreciate the central location, the friendly hospitality of Hotel Cleveland. In the very heart of Cleveland, adjoining Union Passenger Terminal, garage, and Terminal office buildings. Convenient to stores, theatres, boat docks, Public Hall, Stadium.

HOTEL CLEVELAND
Cleveland, Ohio

fee supply was finally exhausted, too.

Youngest breakfast flyer, who spent the morning happily eating sand, was 16-month-old Ralph Pickel, son of Jack Pickel, operator of the Seattle Seaplane Service, also on Lake Union. Oldest guests were twins—82-year-old Mrs. Annette Howard of Aberdeen, Wash., and Mrs. Juliette Powers of Santa Maria, Calif. They arrived in a *Seabee* flown by Ray Howard, their son and nephew.

Despite predictions, the weather was nearly perfect. The sun broke up scattered clouds. Coats, sweaters and other outer garments were draped on convenient logs. Shoes followed, and the barefoot breakfast flyers gamboled on the beach and splashed through the shallows.

Frank Sugia, professional accordionist, had come over from Seattle on the *Norseman*, and he furnished breakfast music on request. Later, to the accordion music, several couples began an impromptu dance session on the water's edge and ankle-deep in the gentle surf.

At the same time other flyers, changing to bathing suits, were taking to the water in earnest. A half dozen bathers churned through the water offshore, but only the hardiest stayed for more than a few minutes. Fed by many glacial streams, the water of Puget Sound has a permanent chill.

The flight log, checked over after breakfast, showed planes on hand from Olympia, American Lake, Kenmore, Tacoma, Kirkland and other bases. But most of the ships came from three Lake Union bases. The Kurtzer terminal furnished 10, with the Sky Harbor and Seattle Seaplane Service accounting for nearly that many more.

The weather held, and even improved, for the trip home. The flight began to break up shortly before noon, with planes taking off singly, or in wide formation, into a freshening wind. The planes turned over timbered Indian Island, with its harbor full of "retired" naval vessels, and headed up-Sound.

Many of the planes, once off, dropped down to "masthead" level for the flight home, skirting the green shores of the timber country only a few feet above the water. The prospect of a forced landing or engine failure in this position has no dangerous connotation for seaplane flyers. As long as they are over water, the "runway" is always right below.

Some still in formation, the planes quartered Puget Sound, past Point No Point, and over scores of open fishing boats in which Sunday salmon trollers were trying their luck. Those intense gentlemen didn't even deign to look up from their tackle and oars. The low-flying planes drew friendly waves, however, from the bridges of several outbound freighters, plowing down the Sound toward the Strait of Juan de Fuca and the ocean beyond.

If praise of the participants is any criterion, the flight almost certainly will be repeated. And next time, say Kurtzer and Pierce and Kennell, invitations will be extended to float pilots in the southwest Washington and Portland, Ore., areas, where approximately 40 more seaplanes are based.

Returning breakfast hoppers were unanimous in their approval of "Operation Beachhead," in spite of its off-the-cuff quality. The flight's informality, in fact, was one of its best features. That and its convenience. Flyers approved, they said, not having to ride a bus miles from airport to town in order to eat an "official" breakfast.

One flyer summed it up succinctly:

"No buses, no speeches—just a darned good time." And who minds a little sand in the scrambled eggs? END

FLYING

Eastern Maine

(*Continued from page 46*)

PENOBSCOT COUNTY: Same as Aroostook.

The waterfowl outlook is not so optimistic. This year's prospects appear to be about the same as last: generally poor. The 1946 season is agreed to have been a bad one, with fewer ducks than for several years past. However, breeding of native black ducks this summer was good.

An institution peculiar to Maine is the hunting and fishing camp. Neither hotels nor resorts, they dispense with "extra-curricular activities" and concentrate on the game at hand. Most of them are rough-hewn but snug log cabins, run by old-timers who can feed a man all the grub he can hold, regale him with endless tall tales, and see that he gets a trophy. Some of them never advertise, are hidden away among the hills and on islands in lakes, and are known only by word-of-mouth to a select "gang." It wouldn't be fair to reveal their locations—but they can be spotted from the air. Others advertise and are listed in a booklet, "Hotels, Camps, and Tourists Homes in Maine," available from Maine Development Commission, State House, Augusta.

This same publicity organization has a mimeographed leaflet, "Maine Hunting Accommodations," listing camps and hotels which remain open until the end of the hunting season this year. About a dozen are listed in each county. Rates range from $4 to $30 per day. Average is $10 to $15—not high, in view of the fact that the price includes meals, lodging, guide service as well as other incidentals.

Other accommodations in the area include tourist homes and farm houses, in which the rates are somewhat lower—averaging $4 per day. Hotels in the larger towns average about the same. These, of course, do not usually provide guide services.

Maine's guides are famed for skill, friendliness and for their inexhaustible collections of tall stories. Wherever sportsmen meet, the Maine guide is spoken of with respect. There are over 3,000 registered guides in Maine—they can keep you straight on state laws and some of Maine's unusual "rules of the land."

Maine has what are called "unorganized areas." These are, you might say, embryo townships. Many of them are inhabited, but have no name, no post offices, and no local governments. Much of the northern and eastern sections of the state are so subdivided. The law says that, from May 1 to November 30, no non-resident shall kindle fires in unorganized territory while hunting, fishing or camping, without being in charge of a registered guide. (Public camp sites are excluded.) This law has been interpreted to apply to gasoline stoves, canned heat and other heating devices in which there is an open flame.

As a general rule, guides are paid from four to six dollars a day and their fee is included in camp fees. One guide to three persons is the limit; in other words, a party of four must have two guides.

Wardens of the Department of Inland Fisheries and Game are generally men of high caliber and do much to make hunting and fishing in Maine a pleasure. They are not the type who skulk behind bushes awaiting one false move to clap the hapless sportsman behind bars. Wardens regularly patrol their sectors and check licenses. Such routine work is handled courteously, and often with a few words of advice about equipment and good locations. Wardens are all civil service men and are not under political influence. If an honest mistake is made by the hunter, the wardens usually point it out and forget the incident.

Non-resident hunting licenses for all game except deer cost $10.15, for all species including deer, $15.15. These licenses can be procured easily at hotels, camps, sporting goods stores and similar places. A few large stores in Boston and New York sell them. The deer license includes a "deer tag," which must be filled out and attached to the hunter's deer. Failure to do so may result in an illegal possession charge. Duck hunters are required to have a Federal Duck Stamp. It is illegal to molest or drive game by airplane, and illegal to shoot any game from an airplane. *A special permit, available from any warden, is required for transporting game by plane.* There is some anti-airplane sentiment among non-flying sportsmen and guides, based on a fear that planes may carry away too much game and that it isn't sporting to use a plane to hunt. So fly

DO AS BIG AIRLINES DO—*Depend on Weems*

FOR NAVIGATION INSTRUMENTS!

Captains H. Kurtz and J. R. Irwin of Capital Airlines use Weems Mark II Aircraft Plotter to check their course before take-off.

PILOTS! STUDENTS! For accurate navigation, you need instruments you can absolutely rely upon. That's why it pays you to select your requirements from the famous Weems line where you'll find many instruments which are standard equipment with U. S. Army-Navy Air Forces and major airlines like Capital, TWA, Pan-American, Eastern, Braniff and many others. Two navigation "musts" for pilot and student alike are the Weems Mark II Aircraft Plotter and the Dalton E-6B Computer.

WEEMS MARK II AIRCRAFT PLOTTER — For sectional and world air charts. Has permanent markings on transparent plastic—two statute mile scales on same instrument, 1:500,000 and 1:1,000,000. Also has protractor face and 12-inch rule markings. Used for plotting bearings, courses, lines of position —constructing wind diagrams and measuring distances and angles. Only $2.

THE DALTON E-6B COMPUTER—Two sides—one for solving all vector and DR problems—the other for solving fuel consumption, time-speed-distance, nautical-statute mile conversion problems and correcting altitude and air speed for temperature and pressure. Simple to use—just plot free hand on transparent surface and erase after use. Complete with leather carrying case and instruction booklet, $10.

Get Weems Navigation Equipment at your Aviation Supply Store—or write direct for FREE descriptive catalog. Address Dept. 7, Weems System of Navigation, Annapolis, Maryland.

AIR WSN WEEMS SEA SYSTEM OF NAVIGATION

ANNAPOLIS, MARYLAND

To Aviation Enthusiasts

BEAUTIFUL FULL COLOR CHRISTMAS CARD FOLDER

Mailed FREE—No Cost or Obligation. Send no Money

Personalized

CHRISTMAS CARDS

Mode-Air Custom Designed Christmas cards, offered for the first time to flying friends everywhere. A choice of 21 beautiful full color designs showing your favorite personal plane—the very airplane you fly—available with your name imprinted free. Truly a personalized greeting card . . . fill in the coupon and MAIL TODAY!

No requests for sample folders accepted after Nov. 29th.

—MAIL THIS COUPON TO—

MODE-AIR CARD CO. East Troy, Wis.

Please send me without charge one of your BEAUTIFUL FULL COLOR CHRISTMAS CARD FOLDERS.

Name_____

Address_____

City_____ Zone_____ State_____

LEARN TO FLY A HELICOPTER

APPROVED G.I. SCHOOL

Make a place for yourself in the future of aviation by learning to fly a helicopter now. As production facilities expand and improvements are made in design, the helicopter finds new applications in business, transportation and communications. Opportunities for a successful career are unequalled by any other profession.

Flight and ground School instruction at Teteboro Air Terminal, Teteboro, N. J.

METROPOLITAN AVIATION CORP.

500 5th AVE., NEW YORK • BR. 9-5200

safely and courteously, don't boast of the limits you bagged, and observe all game laws.

Equipment can be bought in almost any town, but the visiting airsportsman can bring his own if he wishes. The .30-.30 carbine is the favorite big-game rifle in the area but 12 and 16 gauge shotguns are preferred for waterfowl and upland bird shooting. Cold weather clothing consists of woolen underwear, heavy shirt and hunting pants, mackinaw coat and heavy waterproof boots or shoe-pacs. Most hunters insist on some red article of clothing.

The Lewiston sectional chart (W-10) covers the four-county area. Southeastern Maine is easily reached from Boston and New York, there being a convenient series of airports all along the way. The coastline can be followed most of the way to simplify navigation problems. Portland, one of the largest cities en route, has a good airport. Anyone needing outdoor equipment can stop in at the Stover Airport, Freeport, (Boston Chart) and go to the famed L. L. Bean outdoor supply house there. Bean offers 24-hour service. Licenses can also be purchased there. Another good place to stop is at the Augusta, Me., Airport. Weather reports are available (it's an airline stop) and a 50-cent taxi ride to the State House about a mile away will bring you to the head offices of the Department of Inland Fisheries and Game and Development Commission, where much help is available. The office of the Department of Aeronautics is at the airport. There are no red-tape state laws about registering pilot and plane licenses.

Hunting and fishing seasons in Maine include the following:

Deer—season extends from October 21 to November 30 in Aroostook and Penobscot counties, and from November 1 to November 30 in Hancock and Washington counties. Seasonal limit is one, of either sex. All deer killed must be registered. Use of dogs, lights, snares, bait prohibited.

Rabbits—October 1 to February 28 in Aroostook, Penobscot, Washington, and Hancock counties. Daily limit, four.

Bear and wildcat—no closed seasons.

Fox—no closed season in organized towns; October 16 to February 15 in unorganized towns.

SOME AIRPORTS SERVING EASTERN MAINE

Airport (longitude and latitude)	Phone	Nearest Town and Distance	Longest Runway	Gas Grades	Service Facilities	Additional Information
Dow Field (military)		Bangor, 1 mi.	7,000 ft.			Army-Operated; closed to civilian traffic except in emergencies.
Doane's Airport (44° 45'-68° 40')	5513	Brewer, 1 mi.	1,600 ft.	80	Major repairs	George F. Doane, Mgr.; unpaved strips
Old Town (44° 70'-58° 40')	320	Old Town, 1.8 mi.	4,000 ft.	80-91	Minor repairs	Kenneth G. Dewitt, Mgr.
Swasey Airport (45° 15'-68° 36')		Enfield, 2 mi.	1,700 ft.	80		William Swasey, Mgr.
Moscone Airport (45° 34'-68° 23')		Mattawamkeag, 4 mi.	1,500 ft.			Charles E. Moscone, Mgr.
Millinocket Mun. Airport (45° 39'-68° 41')	556	Millinocket, 1 mi.	5,100 ft.	80-91	Repairs	Angus Bears, Mgr.
Bar Harbor Mun. (44° 27'-68° 21')	Ellsworth 200	Bar Harbor, 9 mi.	4,500 ft.	80-91	Major repairs	G. A. Gallagher, Mgr.; night lighting
Billings Airpark (44° 30'-68° 22')	Ellsworth 155-W2	Trenton, 3 mi.	1,750 ft.	80		Percy Billings, Jr., Mgr.; turf strip
Deblois Flight Strip (44° 43'-67° 59')		Deblois, 3 mi.	4,000 ft.			Deserted flight strip in wilderness; no service; managed by Public Roads Administration
Eastport Municipal (44° 54'-67° 01')		Eastport, 1½ mi.	2,850 ft.	80		Roswell Y. Furman, Mgr.; 10,000-ft. seaplane area located on nearby ocean; ramp
Princeton Mun. (45° 12'-67° 33')	3-3	Princeton, 1 mi.	4,000 ft.	80		W. E. Ketchen, Mgr.
St. Croix (45° 07'-67° 19')		Calais, 3 mi.	2,000 ft.	80-91		
Lincoln (Seaplane Base) (45° 22'-68° 30')		Lincoln		80	Minor repairs	Located on Mattanawcook Pond; float and ramp; operated by Newport Flying Service
Down East (Seaplane Base) (44° 49'-68° 44')	Brewer 8833	Brewer, 1 mi.		80	Minor repairs	River is narrow at this point; ramp, float, boat

Upland game birds—seasons end on November 15.

Applicable Federal migratory bird regulations include:

Woodcock—season closes October 30.

Ducks (split season)—October 7 to October 18 and December 2 to December 13. Daily limit, four; one may be a wood duck.

Geese (split season)—October 7 to October 18 and December 2 to December 13. Excludes snow geese, Ross geese, and Brant. Daily limit, four; one may be a Canadian goose.

Scoters (Coots)—same as for ducks and geese. Daily limit, seven.

Mergansers (American and red-breasted)—same dates, limit 25.

To hunt ducks in Maine, it is necessary

to have a Federal duck stamp. Shooting hours are from sunrise to one hour before sunset except on opening day and the first day of the second half of split seasons, when shooting begins at noon.

Maine's ice-fishing regulations are complex, but are given completely in a booklet issued by the Department of Inland Fisheries and Game. Even in the same counties, certain lakes may be open at the same time other lakes are closed. In general, however, ice fishing is allowed during the entire time that ice is on the lakes.

All Maine game laws are given in a booklet issued by the Department of Inland Fisheries and Game, Augusta. It's a good idea to get a copy of the booklet (titled "Maine Hunting and Trapping Laws, 1947-48").

Another handy book for the flying hunter or fisherman is "Hunting, Fishing, and Canoeing in Maine," produced by the Maine Development Commission, State House, Augusta. Detailed information is given on all phases of hunting. Maps show all unorganized areas. This commission, incidentally, is prepared to furnish information on practically all aspects of Maine life.

This is the time of the year to watch the weather. First snows deep enough to put a plane on skis usually fall in this area from December 20 to January 1. Lakes freeze over and are closed to seaplanes about the middle of November. The ice becomes thick enough to support skiplanes (about four inches is considered safe for a lightplane) during the winter, but local advice should be sought before heading for any frozen lake.

November and December visitors should bring skis for their planes, or at least have them ready for immediate shipment. Should a snowstorm threaten, snow-removal is prompt at the following Maine airports: Sanford, Portland, Auburn-Lewiston, Augusta, Waterville, Old Town, Millinocket, Pittsfield, Houlton, Presque Isle (military—emergency only). These airports are also open to skiplanes, which can land on unplowed areas.

With this information, plus that listed with this article, a FLYING vacationist should be able to plan a Maine hunting trip easily and with confidence. Admittedly, some of the country will be wild, but that should be no detriment to a man after a buck for the mantelpiece or a bearskin rug for the den. The adventure and sport such a vacation offers will long be remembered. Incidentally—the game department operates several planes for patrol and enforcement work. Chances are that you'll see one or more of them at work while you're there.

ROBERT J. WHITTIER

Prize Pigmies

(*Continued from page* 50)

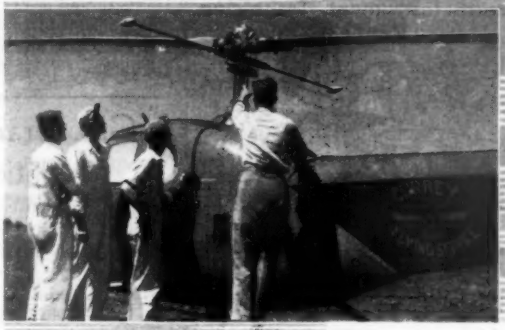
The specifications of the planes and the rules of the race were drawn up by the Professional Race Pilots Association. The engines are all stock ATC'd engines of not more than 190 cubic inches displacement. The Continental 85-h.p. engine had the maximum power under this provision and was universally chosen. The propellers had to be fixed pitch, though they might be ground adjustable. Wing loads could not exceed 12 pounds per square foot, and minimum dry empty weight of the planes had to be 500 pounds plus or minus one per cent. Landing gear was non-retractable, the pilot was protected by a nose-over structure, and parachutes were compulsory. Materials and workmanship had to conform to aircraft standards, or equivalent, and general design had to be approved by the Professional Race Pilots Association. Pilots, too, had to meet minimum experience qualifications.

Goodyear's purpose in sponsoring the race, according to P. W. Litchfield, Goodyear board chairman, was to "encourage the design of light planes. It will also give spectators at the National Air Races the opportunity of seeing skillful piloting at its best."

The winning plane was rebuilt from the 100-km. speed record holder which was built and flown by Steve J. Wittman of Oshkosh, Wis., in 1937 at Detroit. It has a fabric-covered steel tube fuselage, a wood wing, and the steel spring landing gear which Wittman designed. William Brennand, the pilot, won the first heat, but the semi-final, and the final, for total earnings of $8,500.

Second place winner was Paul Penrose in *Swee' Pea*, designed by Art Chester. *Swee' Pea* won second in the first heat,

CURREY SCHOOL OF AERONAUTICS



WHERE THE accent IS PLACED ON... PRACTICAL TRAINING

FLIGHT INSTRUCTION
•
AIRCRAFT AND ENGINE MECHANICS TRAINING
•
HELICOPTER MAINTENANCE & OPERATION

Hundreds of enthusiastic graduates praise Currey School of Aeronautics to the sky. After starting successful careers in aviation, they realize the extra value of this famous school's teaching principles —*minimum books and lectures; maximum practical training.*

Flight and A. & E. mechanics instruction offered—includes training courses requiring the student to obtain his pilot's certificate and A. & E. in order to graduate.

In addition to 74 regular aircraft, precision type equipment of every description is available in the extensive Currey shops and laboratories—supervised by widely experienced, certificated instructors. All facilities are more than ample for the students enrolled.

Located at the municipal airport of Galesburg, Illinois—a beautiful, clean, small city where living conditions and social surroundings are ideal. Prospective students are cordially invited to inspect both school and city.

All courses offered are approved by the Illinois State Department of Education for training of Veterans under the G.I. Bill. Write for complete facts today.

New Classes start every five weeks.

HELICOPTER MAINTENANCE AND OPERATIONS COURSE

For those students who desire the most advanced field of aviation. A course for helicopter pilots or for those who wish to obtain their Aircraft or Engine Certificate, with specialization in helicopter maintenance. Refresher course and complete flight training is available in Bell Helicopters.

MAIL COUPON TODAY

CURREY SCHOOL OF AERONAUTICS
(Division of Currey Flying Service)
MUNICIPAL AIRPORT—GALESBURG, ILL.

Without cost or obligation, please send me complete information on your school and the various courses offered.

Name.....Age.....

Address.....

City.....State.....

A 69 to 1 SHOT
-AND YOU WIN EVERY TIME!

Invest 34 Week's Training NOW as an Aircraft Instrument Technician

Enjoy 2340 Weeks of Better Jobs—BETTER LIVING!

(52 wks. per yr. x 45 yrs.—your life span 20 to 65) Think of it! Invest in yourself—learn to qualify as an expert Instrument Technician now—and enjoy the benefits of that specialized training the rest of your working life.

A Good Investment—Big Dividends
Great Opportunities

A specialized career in aviation. Be an Aircraft Instrument Technician. American Schools of Aircraft Instruments 34 weeks intensive course approved for Veterans, available for non-veterans. School oldest and largest devoted to aircraft instruments.
A. S. A. I. graduates are employed in industry or have own business.

GET FREE CATALOG NOW . . . MAIL COUPON

AMERICAN SCHOOLS OF AIRCRAFT INSTRUMENTS
5145 W. San Fernando Road, F-12
Los Angeles 26, California

Please send me free booklet describing opportunities in Aircraft Instrument field.

Name_____
Street_____
City_____ Zone_____
Veteran_____ State_____

INSIGNIA OF THE FRATERNITY OF AIRMEN

PAT. APPL. FOR
WITH YOUR LICENSE NO.
ORDER FROM YOUR AIRPORT MANAGER
Or Write for Order Blank
PILOTS' SUPPLY CO.
FALLSINGTON, PA.

Amazing! POCKET OR PURSE SIZE New RADIO

WORLD'S SMALLEST RADIO KNOWN! Wt. only ¼ lb. Beautiful Silver Black plastic case. Has inductive Slide Tuner—W4 Crystal Diode—NO TUBES, BATTERIES OR ELECTRIC "PLUG IN" NEEDED! Should last for years!

GUARANTEED TO PLAY NEW 1948 MODEL

on local stations if complete instructions sent are followed. Use it at home, in bed, in many offices, hotels, cabins—most anywhere! HUNDREDS OF SATISFIED CUSTOMERS ALL OVER THE WORLD!

SEND ONLY $1.00 (Cash, M.O. Check) and pay postman $2.98 plus delivery fees on arrival or send $3.99 for Post Paid delivery. Complete as shown—ready to play with self contained personal phone. WONDERFUL GIFTS FOR CHILDREN! Order now at this low bargain price—Prompt shipment on orders sent now—today! Be the first to get YOUR Pakette Radio! (All foreign orders $5.00 U. S. cash with order).

Pa-Kette Radio Co., Inc. Dept. F-12 Kearney, Nebr.

PILOTS' JACKETS

(left) SHEEPSKIN LINED JACKET. Brown leather. Army B-3 style. Zipper front. 34-46 ..... $15.95
NEW AIR CORPS SURPLUS. B-15 style. Green poplin. Warm alpaca lining. Genuine Mouton fur collar. 4 Pockets. 36-46 ..... $14.75
PILOT'S CAP. (Illus.) Brown leather, Lamb's fleece lining and ear flaps. $2.50
Write for FREE Illus. List Army Surplus. Orders sent postpaid except C.O.D. Satisfaction or Money Back.

CONSUMERS CLOTHING CO., Box 3-F, 26 Greene St., New York 13, N.Y.

first semi-final, and in the final, for total winnings of $4,850. Third and fourth respectively were Herman R. ("Fish") Salmon and Tony LeVier, in very similar all-metal planes designed by LeVier & Associates, a group of test pilots, engineers, and workmen at Lockheed. Both of these planes were called *"Cosmic Wind"* but each also was named specifically after its pilot, *Little Minnow* (for Salmon) and *Little Toni* (for Tony LeVier).

Goodyear officials are debating whether to make this race for lightplanes an annual event. There is opposition from some quarters of the industry which feels that the race does not serve the cause of safety. If the race is continued it undoubtedly will have some rule modifications—one probably being a change in engine specifications to permit other manufacturers to compete on more even terms with Continental. END

Is G. I. Training Good for Aviation?—Yes

(*Continued from page* 31)

began it has stimulated private flying, increased and maintained air-mindedness in the United States to an extent markedly beneficial to national defense, and kept the lightplane industry going. The program has not degenerated into a racket, as was once widely feared, and for many GI trainees there are immediate employment benefits.

Operators contacted by FLYING were frank to admit that the GI training program has faults. Suggestions for improvement were advanced by a cross-section of aviation veterans, including Arthur C. Hyde, who operates Congressional School of Aeronautics and Hyde Field near Washington, D. C.; Niels C. Beck, Associate Dean of Parks College of Aeronautical Technology of St. Louis University; Joseph Garside, President of Wiggins Airways, Norwood, Mass.; The University of Southern California College of Aeronautics; Wayne Weishaar of the Aeronautical Training Society; Harry Meixell of the National Aviation Trades Association, and Maxwell W. Balfour of Spartan.

The collective experience of such operators has been that, despite contentions to the contrary, GI trainees as a group are no more reckless flyers than private customers. The Spartan School of Aeronautics, for example, has a record of 75,000 hours of flying with GI students in the past two years with only two dismissals.

It is true, Garside acknowledges, that insurance companies have experienced excessive losses, have been weeding out those operators whom they consider poor risks, and have raised the rates to other operators.

However, the Wiggins Airways president points out that prior to the war most operators did not insure their equipment for crash. During the Civilian Pilot Training program and the war training programs the operators changed their policy and since the war the majority of them have been carrying full insurance. Garside adds:

"It is entirely possible that the rates established by the insurance companies were not based on adequate experience and that they have proved to be too low.

"On the other hand, it may be that the post-war influx of new operators and the availability of cheap surplus equipment has resulted in a higher-than-average ratio. This trend may continue until these new operators learn the business thoroughly and their business stabilizes.

"In general, I would not say that the GIs as a group are responsible for any more reckless flying than are private customers."

As for so-called "quickie" schools, unquestionably new operators were attracted to aviation by what seemed to everyone a post-war aviation boom. The profit motive was a strong inducement as it is in any business. But most veterans like Garside, Balfour and others feel that if these newcomers have failed to give good flight training, the reason is lack of experience in the operating game rather than a conscious effort to gyp the GI.

The Spartan official maintains that if, as claimed, the quality of training given by some schools is bad, efforts should be directed toward closer supervision by the CAA, since the Veterans Administration itself is not authorized to do such policing. He says:

"State accrediting agencies as such do not have the funds, the personnel or the know-how to police the industry.

"My solution is that the Government recognize the size of its investment and increase the CAA inspection staff sufficiently to provide special inspection for all flying schools at frequent intervals."

Some operators undoubtedly have been lax in enforcing attendance and discipline, and the complaint is heard that the GI trainees don't attend school regularly, aren't really interested in aviation and don't intend to keep up their flying. Wiggins, Spartan and other well-established outfits have licked this problem very simply by adopting the stern policy of dropping students unless they attend regularly. Spartan permits two excused absences from flying schedules each month if permission is requested 24 hours in advance. Absences caused by illness are excused only when evidence is furnished in the form of a doctor's certificate or on recommendation of the Spartan resident nurse. Frequent illnesses are regarded as indicating unsuitability for flying as a profession.

This rigid policy, Balfour says, has caused no loss in enrollment. Students recognize its value and, from the operator's standpoint, regular attendance brings lowered costs and enables the school to offer instruction for less money.

Probably the toughest "rap" that the GI program has to face is the general criticism that many veterans are wasting vital educational entitlements on flying lessons with scant possibility of future employment in aviation. Dean Beck of Parks College frankly concedes that "flying jobs in aviation today are scarce as hen's teeth."

And the majority of GIs, according to Garside and other operators, are taking

only flying lessons, although they can't expect to get jobs in aviation with only a private flying license.

Beck proposes that GIs be limited to the amount of flight training necessary to obtain their private pilot's license. He feels that to permit all applicants to take additional flight training "is ill advised and thoroughly useless from the standpoint both of the individual and the industry."

Experts of the University of Southern California College of Aeronautics point to a basic weakness in Veterans' Administration policies. Universities and colleges have always allowed enrollees to pursue a major course with one or two minor subjects; but the VA insists it will not pay for flight training as a minor for any aeronautical engineering or aviation mechanics' course. If a veteran wants to fly that must be his major objective. He cannot take other subjects.

USC officials believe this is a fundamental educational error. Such a policy turns out pilots who know flying and nothing else. It is exactly the opposite of Army Air Forces basic training.

Employment opportunities in aviation are not restricted to actual flying. Spartan recently reported requests for a score of flight instructors, particularly for those with A&E certificates as well as instructor ratings. The Congressional School of Aeronautics and Hyde Field, with 26 instructors and about 50 planes engaged in training some 500 students, has found that every one of their students who went through full training to obtain a flight instructors' certificate obtained a job in the aviation field.

Hence, Beck suggests that GIs be limited to the private license unless they have some specific and legitimate purpose in mind—such as the opportunity of obtaining a job as a pilot or flight instructor. Recognizing the difficulty of imposing such restrictions by legislation, he proposes a nationwide educational campaign. Beck explains:

"My thought would be to point out the harm done to everyone concerned as a result of this promiscuous solicitation of veterans for the purpose of flight training; a campaign which would educate operators in the counselling of veterans so that their extremely valuable entitlement would not be consumed without benefit to the individual.

"This could be conducted through the various veteran counseling centers, adult education centers, reputable civilian operators, colleges and universities in such a way that shady operators would be boycotted in their efforts to secure victims."

Others argue—and very convincingly—that the question of the veteran's job status has no place in the picture. If such a question is raised in connection with the flight training program, they say, it must be raised in connection with every other form of GI training and the whole concept of the GI Bill of Rights.

Congress did not say that the GI had to use his training to gain a livelihood. The law leaves up to the veteran's own discretion the choice of training and the use he will make of it later.

The GI flight training program has the endorsement of the armed services and

Examine this Amazing Bargain for a Week **FREE!**

These 14 New Aviation Instruction Books

—covering EVERY subject related to designing, constructing, servicing & flying ALL modern aircraft

YOURS for ALMOST 1/2 Price! While Supply Lasts!

2500 Pages
2400 Illustrations
Prepared by More Than 25 Top-Ranking Experts!

LEARN to be an expert in Aviation—qualify for high-pay and rapid promotion! This great library gives you simple, authoritative, step-by-step instruction in ALL major branches of aeronautics, by a faculty of world famous flyers, technicians, heads of university engineering departments, industry leaders, etc.—men like Dr. Alexander Klemin, Lt. Col. Harold Hartney, Thoburn C. Lyon, Maj. Gen. J. E. Fechet, Prof. Frank N. M. Brown, Capt. Holden C. Richardson, Nils Henrik Randers Pehrson, Lieut. Myron C. Eddy, H. L. Bender, Martin Berzeley, Prof. Benjamin Ruffner, and many others! It would cost you hundreds of dollars to secure instruction in any residence school from such authorities. A single course by one of these experts would cost more than the bargain price of this entire set!

LIBRARY OF AERONAUTICS

The vast scope of the library is indicated by the following titles: Flying Boats; Aerial Navigation; Meteorology; Handbook of Airplane Maintenance and Operation; Aircraft and Power Plant Accessory Equipment; The Complete Flying Manual; Elements of Technical Aeronautics; Parachutes; History of Aviation; Flight Instruments; Radio in Airmanship; Diesel Aviation Engines; Flying by Instruments; Superchargers for Aviation. 2400 photos, drawings, diagrams, maps, tables. Complete directory of more than 1800 airports. Specimen sectional Coast Guard Topographic Chart in 5 Colors. Glossary of Aviation Radio Service Terms. Glossary of 233 Meteorological Terms. 2 Indexes for quick reference. Thousands of these sets originally sold in artcraft binding for $37.00; a wonderful buy in handsome cloth-binding for only $19.80—on easy terms! National Aeronautics Council, Inc., 37 W. 47th St., New York 19, N. Y.

MAIL THIS FREE-TRIAL COUPON →

National Aeronautics Council, Inc.
37 W. 47th Street,
New York 19, N. Y.

DO NOT WRITE IN BOXES 134 2012

Send me immediately, postpaid, for free examination, the 14-volume "LIBRARY OF AERONAUTICS." After a week, I will either return set and owe nothing; or keep it and send initial payment of only $2, and $2 a month until the bargain price of only $19.80, plus a few cents postage, is paid. (Cash with order price $18.50, postage free.)

Name.....

Address.....

City & Zone No.....State.....

SAVE MORE. Send $2 initial payment now and we will stand shipping charges on this 15-lb. set. Immediate refund if you return the books.

NEXT CLASSES BEGIN
JANUARY 5, FEBRUARY 2

Let Roosevelt School put wings on your fingers

Become a CAA-Licensed Airplane or Engine Mechanic in 24 Weeks

You can step into a good job in aviation if your fingers have been trained to service and repair airplanes. But—a CAA license is a must for best jobs! Employers prefer licensed mechanics—they know a CAA certificate is proof of thorough training.

Roosevelt has trained thousands of young men to qualify for licenses as CAA-approved mechanics. Practical instruction. Choose from two courses:

(1) Become an Engine Mechanic in 24 Weeks
(2) Become an Airplane Mechanic in 24 Weeks
(Become an Engine *and* Airplane Mechanic in 48 Weeks)

ROOSEVELT AVIATION SCHOOL
MINEOLA, LONG ISLAND, N. Y.
Phone Garden City 8000

ROOSEVELT AVIATION SCHOOL 12-47
Hangar 23, Mineola, L.I., N. Y.

I'd like to know how I can become a Licensed Engine ( ) or Airplane ( ) Mechanic in six months, or both ( ) in 48 weeks.

NAME .....AGE.....

ADDRESS .....

ORDER BY MAIL AND SAVE! BRAND NEW! **CHRONOGRAPHS**
17 Jewel Fine Swiss Movement

only $39.95 INCLUDES TAX

Less than half the regular price. Thousands distributed to the U. S. Army Air Force during the war. A must for the flyer, sportsman. Use it for all sports, games, races, navigation and time and speed problems. Extremely accurate timekeeper. All steel case. Genuine leather strap. Miles per hour calibration, stop watch, sweep second hand, lapsed time dial.

WHITE PLAINS WATCH CO. River Park 19A White Plains, N. Y.

RIDE YOUR WAY TO
GOOD TIMES
ON A HARLEY-DAVIDSON

Every strange road challenges you to new adventures! Every trip on a Harley-Davidson opens new worlds of pleasure, with jolly companions, new things to do and see! So why not swing into the saddle of your own Harley-Davidson and head down some happy highway to good times — to thrilling gypsy tours, exciting race meets, hillclimbs, endurance runs, delightful sightseeing expeditions? "Owning your own" is easier than you think. See your Harley-Davidson dealer — write for FREE Enthusiast Magazine and literature on 1948 models.

HARLEY-DAVIDSON MOTOR CO.
Dept. F
Milwaukee 1, Wis.

HARLEY-DAVIDSON
Motorcycles

TYPE B-8 AIR CORPS
Polaroid GOGGLES

Kit consists of chamois-lined large "window-type" rubber framed goggles, elastic headband and 9 genuine Polaroid lenses: 3 clear, 4 green, 2 amber.

Complete Brand New Kit
$12.00 Value
DEPT. F
$2
ROY PARIS
P. O. BOX 6000 DALLAS, TEXAS

REAL GAS ENGINE $6.95

The new THOR "B" — Sensational miniature gasoline engine that REALLY works. Super-power performance: over 25,000 already sold. 1/6 H.P. Complete with coil and condenser, only $9.95. In KIT form, fully machined, 5 minutes to assemble, $6.95, without coil and condenser. Powers all models, fully illustrated instructions. Send $1.00 — shipped collect same day C.O.D. FREE — send for big 24-page illustrated Catalog showing hundreds of hobby items.

AMERICA'S HOBBY CENTER
156 W. 22 St., Dept. F-127, N.Y. 11

AERONAUTICAL ENGINEERING

B.S. Degree in 27 Months. Thorough Training. Modern Wind Tunnel. Courses also in Civil, Electrical, Mechanical, Chemical, Radio Engineering; Business Admin., Accounting, Sec'l Science. Graduates successful. 64th year. Enter Jan., March, June, Sept. Write for catalog.

TRI-STATE COLLEGE 7127 College Ave. Angola, Ind.

the CAA. Both strongly support it. The CAA considers it a substitute for its Civilian Pilot Training program which existed prior to the war.

Although the CAA takes no direct part in managing the GI program, schools are required in most states to have CAA approval before giving the various flight training courses authorized by the Veterans' Administration.

In addition, the GIs must meet CAA requirements before they are granted certificates or ratings, such as a private pilot certificate, commercial pilot certificate, flight instructor rating, or instrument rating.

Viewpoint of the Army, which also has the Civil Air Patrol under its wing, is that it would like to see every American learn to fly just as it would like to see more trained sheet-metal workers who can build aircraft or more youths in ROTC courses to learn discipline.

Believing that the next war will be fought in the air, the AAF thoroughly approves of the GI flight training program or any other enterprise which trains men in aviation.

Some operators, such as Garside, sincerely feel that the aviation operating game might be a much smaller but healthier business if it had not been given the artificial stimulus of the GI program, that it had been the victim of over-expansion and must go through a readjustment cycle.

However, even this group recognizes that if the GI program were suddenly slackened or discontinued operators would face a disastrous situation.

It must be remembered that the anticipated post-war upsurge in the public interest in flying has not materialized. At most airports, only 10 per cent of the instructional work is devoted to private flyers; the rest is GI.

Demand for lightplanes is now lower than it was in pre-war 1941, according to some operators. Many prospective purchasers lost interest after spending years during the war on a "waiting list"; others have put wartime savings to other uses, and still others have been disillusioned by post-war high prices.

In short, the lightplane industry has kept its assembly lines in operation largely because GI flight training has created a demand for its products.

Is G. I. Training Good for Aviation?—No

(*Continued from page* 31)

even the CAA for having wasted a goodly portion of their educational benefits in the futile effort.

Worse, many GI's without flight aptitude and with borderline safety flight performances are soloed and graduated. These are the men who, having survived a war, may find death in an airplane accident as a result of the benefits granted them for their war service.

Why are these men granted "ups" when they should be washed out? Simple. CAA says that to qualify as a certified school the instructors must have not more than 10 per cent wash-outs, excluding voluntary resignations. Operators tend toward playing the percentages lest they lose their certificates.

The GI in many states also may be sucked in by unblushing fly-by-night operators.

There is no national standard which flight school operators must meet to qualify as a "certified" school for GI's. The VA, under the law, must allow each state to determine what schools are qualified.

Some states, acting wisely, have approved only schools with a CAA license. Many others let state boards of education set the standards, and these are often below CAA's.

There are 13 states and two territories which do not require CAA certification of an operator. They are Arizona, Illinois, Kansas, Kentucky, Michigan, Minnesota, New Mexico, North Dakota, Ohio, Tennessee, Utah, Virginia, Wyoming, Hawaii and Alaska.

Even in states where CAA standards are supposed to be met, the veteran gets hoodwinked by political "ball passing." In Maryland recently, a get-rich-quick operator, a professional man in a field aside from aviation who had started a flying service to get GI trade, had allowed his operations to fall below the standard which would have assured a safety margin. Through his political influence, he stalled off a CAA reversal of his certificate. Instead, the Federal agency pushed the responsibility of qualifying the operator for GI training off onto the state board of education. A probationary certification was issued him by the board, upon recommendation of an ex-teacher who did not fly and her assistant, a young ex-AAF pilot whose experience in this sort of thing is practically nil. The probation was to last for three months or until the operator met some arbitrary regulations demanded by the board, 50 per cent of which were extraneous to the operation of a flight school.

The bad ones have no intention of staying in aviation after the veterans' business slows down and therefore have little interest in permanent customers. Ex-GI's who return to these schools for additional flight time become the victims of the same system which provided them with fast training. "The training schedule won't allow it," is the operator's report. He doesn't want these returning veterans who are good for only three or four hours a month. He has all the regular ex-GI students he can handle and only a temporary interest in aviation.

Thus, the former trainee learns why non-GI pilots scream that the GI flight training program breeds discrimination.

Too many operators have let their greed for Government money waltz away with their sense of aviation skill and fair play. A war-time-trained Naval aviator with a commercial license decided he would use his GI benefits to get an instructor's rating. He was welcomed by an operator in Washington, D. C., with open arms.

But when the Navy pilot asked for credit of 200 hours on his commercial license, the operator balked. He wanted

the veteran to start from scratch—no time, no license, nothing—and go through the private and commercial syllabus.

The ex-Navy pilot had four years' educational benefits—probably enough to do what the operator wanted. He didn't, however. He was so disgusted he went back on active duty.

The veteran is entitled to only a $500 per year "tuition" credit from the Government. This goes fast at $7 and $12 per hour in the air. That's why very few students who didn't have previous time can get a vocational benefit from their training. The average vet can do little better than get a commercial license before his total tuition allotment is used up.

As for the operators, it would appear that they are cleaning up.

For many this is the case. For a good number of others, most of whom have been in business a long while and all of whom want to stay, a straight no-GI training program is the policy.

Why? Veterans don't come back. They find paying for their own flight time a little too expensive. And they can't be sold an airplane.

Some operators claim that vets are also just fair weather flyers. When winter shows, vets don't. And then many of them return in April wanting to continue.

Some operators have even dropped the GI program, claiming it doesn't pay as well as catering to non-GI's. In some cases, lackadaisical vets, out for a pleasant vacation at the Government's expense, have cracked up so many planes that the operator's insurance rate has skyrocketed.

Since rates are determined on the accident record, training volume, and the operational procedure of the individual operator, they go up alarmingly when crack-ups are frequent. New insurance policies are not so easily obtained and some operators can't even get insurance.

"If we find that an operator is in the GI business for a quick buck—nothing else—we won't write him up," one agent says.

What about the aviation industry as a whole?

Private non-GI pilots have screamed about the program because of discrimination, but the biggest complaint is prices.

A clause in the operators' contract requires that they not charge the veterans (actually, the Government) more than they charge any other customer. This means that private flyers must match Government bids for flight time. As a result, prices are skyrocketing. Last summer, most operators asked Uncle Sam for increases so sizeable that even he, considered to be an easy spender, balked.

On the Atlantic seaboard, where most operators put in for $7 solo and $11 dual, they went through July without a contract. VA's Richmond office had not approved contracts asking increases of 50 cents to $1 an hour.

Private flyers have further reason to gripe for being offered new planes which are warmed-over pre-war models. Some blame this on the program. They reason that manufacturers, knowing the GI program will keep them going for five years, won't develop better planes.

As for J. Q. Public, who's footing the

AERONAUTICAL UNIVERSITY

• You will make no mistake in choosing Aviation for your postwar career. Tremendous opportunities are in sight—and those who are best trained will get top positions.

Prepare for your entrance into key positions in Aviation at one of the oldest recognized aeronautical schools in the country. Courses in:

• AERONAUTICAL ENGINEERING—B.S. DEGREE
• CERTIFIED ENGINE MECHANICS
• SPECIAL A. AND E. MECHANICS REFRESHER AND COACHING COURSES FOR U.S.C.A.A. EXAMINATIONS
• AVIATION ADMINISTRATION

APPROVED FOR VETERANS' TRAINING

Founded by Curtiss-Wright. Outstanding faculty, modern equipment. Day, evening classes. Placement Service. Member of the National Council of Technical Schools.

AERONAUTICAL UNIVERSITY
Dept. 2, 116 South Michigan Avenue, Chicago 3, Illinois
Please send me your free catalog "Opportunities in Aviation," and full information about the following courses:
☐ Aero. Engineering ☐ Refresher Course
☐ Engine Mechanics ☐ Aviation Administration
Name.....
Address.....

PILOTS FOR IMMEDIATE DELIVERY QUALITY--LOW PRICE ORDER FROM KEANE!

17 Jewel Chronograph wrist watch—45-minute recorder, 2 pushers extra flat, metal dial, rolled gold plated case. The perfect life-time stop watch for FLYING, GAMES, RACES, BOATING, etc.

The watch of accurate timekeeping—made to meet U. S. Army Air Corps specifications, 16 Jewels, sweep second hand.

17 Jewel 30-minute recorder, chronograph wrist watch — 2 buttons calibrated to 1/5th sec. tachymeter (measures speed), telemeter (measures distance). Chrome steel case. NON-MAGNETIC stop watch for FLYING and ALL SPORTS.

MONEY BACK GUARANTEE

John Keane, 5752 Wayne Ave., Philadelphia, Pa.
Please send me following items.....
.....
It is understood that if I am not satisfied I may return my purchase within 5 days after receiving it, for full refund.
Enclosed is Cash.....Money Order.....Check.....
Name.....
Address.....
City.....Zone.....
State.....

John KEANE
5752 Wayne Ave Philadelphia, Pa
Free illustrated catalog — Containing many new personal items for aviators — Log Books, Pins, Novelties, Bill Folds, Tie Clasps, Aviators' Insignia, etc. SEND FOR YOURS TODAY. ORDERS ACCEPTED FOR DELIVERY IN U.S.A. ONLY

A-2

Horsehide Leather

•

Full Lined

•

Full Length Zipper

$19.75

FREE!
Leather Name Patch
(One Line Only)
SIZE 34 TO 46

L-1 Summer flying suit, all wool with 9 zipper pockets.....$12.50

B-15 Flying Jacket of Byrd Cloth Alpaca Lined, full cut, Mouton collar, 2 outside and inside pockets with snaps... 20.00

B-3 Sheepskin Pilot Jacket..... 32.95

B-2 Pilot Sheepskin cap..... 3.75

Sun Dodger Flying cap..... 1.15

SHIPPED PREPAID. Dealers write for quantity prices. ORDER NOW before price increase due to increased labor costs. All goods manufactured in our own plant.

LAWRENCE FLYING CLOTHING
530 S. Dearborn St., Chicago 5, Ill., Dept. F

Outdoor and indoor temperature ... at a glance

Something brand new and refreshingly different in thermometers. First and only fully mechanical thermometer showing both outdoor and indoor temperature on one easily read dial. You read temperature on the New Marsh Duo-Temp as easily as you read time. Attractive design will grace any interior. Highly accurate product of nationally known instrument manufacturer. A proud possession, a gracious gift.

Only $6.75 each prepaid.
(No C.O.D. orders please)

JAS. P. MARSH CORPORATION
2053 Southport Avenue, Chicago 14, Ill.

bills, he approved the program to give the GI a deserved break and because he felt the funds would be saved twice over in the long run. The program was meant to make better citizens and enable the ex-GI to provide for himself and his family so that bonuses such as followed the first World War would not be necessary. If nothing else, the training should enable a veteran to enjoy himself a little better.

But the $125,000,000 per year spent in training former servicemen to fly has not done this.

Being a veteran who already has his wings at Government expense, I feel as if I might sound selfish in saying the veteran flight training program should be discontinued. But it is all too evident that:

1. There are no flying jobs waiting for trainees.
2. Few veterans continue to fly.
3. The present system of certifying operators leaves the GI prey to fly-by-night opportunists.
4. The program is forcing inflation into flight training.
5. Too many operators have gone money-mad and are cutting corners on both training and safety.
6. The sure-fire market has killed the incentive in aircraft manufacturers to design new planes.

There are those who will claim that the veteran is entitled to any training he desires. True. But if he gains no advantage from that right, why exercise it?

There are those who will say that the GI program is a stimulus to flight school operators and manufacturers. This, also, is true—too true.

It is a stimulus—but an unhealthy one. It is a stop-gap which is delaying the real post-war development and stabilization period that private flying must face and establish within the next five to 10 years—without Government aid. END

A Research Plan for Private Flying

(Continued from page 43)

not require additional proof today.

There is a market, a will to buy, as far as individuals are concerned. We can narrow that market down very considerably and still come up with a very sizeable number of active prospects. Let us consider first only those who now can fly. We have 430,000 certificated pilots. Of these, if we exclude about 7,000 airline pilots and perhaps another 7,000 commercial pilots who make their living in daily flying, we have remaining the would-be personal flyers. It is a proper assumption that these individuals, having tasted the thrill and pleasure of flying, are prospects for a plane which they can afford.

For these 415,000 pilots there are only 93,000 airplanes. Of these planes we can exclude an estimated 6,000 large transport planes and some other types. That means we have some 415,000 pilots using some 85,000 airplanes—or nearly five pilots to the plane. Actually, I think we can safely add some part of the 10,000 airline and commercially-employed pilots to this figure because many of them would like to own personal planes too.

We have another large block of prospects known to be interested and partially prepared for airplane ownership. They are the men and women who have learned to fly in the past but who have failed either to obtain certificates or to keep certificates in force. We can assume they like flying and that a good many of them would buy a plane within their financial reach. It is my guess that there are 500,000 persons in this category.

Thus we have an estimated 900,000 prospects, fully sold and half sold, on our product. A basic "want," to fly and own a personal plane, surely exists with these people.

These, of course, are not all of our prospective plane purchasers. We will add to them many other thousands, through a gradual introduction of better marketing methods gained from experience in other fields and by producing a plane which will appeal to those who thus far have never been tempted to fly.

Our product, flying, which the airplane industry is trying to sell and which Congress has charged the CAA with developing and promoting, is wrapped in an appealing package. As he stands looking at it on the shelf, the average man would like some of it.

What is in the package must not disappoint him. I said in an article in FLYING in April, 1945, that we would have 75,000 personal airplanes by now and that, thereafter, unless the planes were improved, we would stay at or near that figure, on a sort of a plateau. With 85,000 now, in the fall of 1947, the prophecy might appear pessimistic but I suggest that the 30,000 war surplus planes now in more or less active use have had an unpredictable effect on all forecasts. Then too, the market has slipped.

So I stand on my previous opinion that we must improve the airplane in safety, utility and expense of ownership if we are to sell it to any wide segment of the population. Above all, the personal airplane must be more useful. To the basic and somewhat romantic desire to fly must be added a practical usefulness.

If the personal airplane is not improved in those three directions we will not have an airplane industry worthy of the name. Developed to an adequate extent, the personal aircraft can easily become the most important factor in the aircraft industry. Used both for business and pleasure it is only here that an almost limitless potential market is available. The industries necessary to satisfy such a market, both in producing and servicing the aircraft involved, will be of major importance in the general economy of the nation.

The personal airplane can be improved in safety, utility and cost by research and development. How shall we go about it?

There are only three sources for such research and development. It must be done by industry itself, by the Government, or by some interested agency, organization or individual. I propose that the problem be attacked by all three and that they pool their results to produce an

airplane which the public can and will buy and continue to use.

Industry cannot stand the cost of the whole program. In fact, its present status indicates an inability to bear any major portion and therefore its part should be kept within limits which it can meet. Let all personal aircraft manufacturers, working through their national association, the Personal Aircraft Council of the Aircraft Industries Association, undertake to develop or discover more economical design for the personal plane and more economical manufacturing methods for its quantity production. The industry as a whole has pooled its patents on two occasions as part of its amazing contribution to our war effort. Let it now pool its talents, ideas, and know-how, and by putting all of its best efforts together, arrive at a plane manufacturing method which will save money and thus reduce the high cost which drives away so many would-be customers.

I believe that by careful designing, production cost can be reduced by about 12 per cent, which is made up of 20 per cent reduction on the basis of improved design-for-production of the present aircraft structure, partially counterbalanced by an 8 per cent increase in cost incident to some added complications and added devices which the public will demand in order to obtain proper utility.

Let the industry invest, say, $100,00 to $300,000 in this part of the development program, directed particularly to improved design for production. Even with unanimous cooperation for this purpose, there will remain plenty of room for competitive effort.

The second source of progress is Government. Development assistance is a fair and proper function of Government. The CAA is charged by Congress with "fostering and promoting the development of civil aviation," and I am not convinced that Congress will refuse appropriations for a well-considered and necessary development program. I believe the extremely promising results of the CAA's cross-wind landing gear program, in which we have developed successfully swiveling gears for five types of planes with only $150,000 of Federal money, will be a telling argument for other Government-managed contracts for plane improvement projects.

Let Government, then, through the usual method of contracts to private industry —we do all our development work this way—undertake to produce a quiet aircraft engine and propeller. The National Advisory Committee for Aeronautics already has completed a great deal of fundamental research on this subject upon which practical development can be built.

This is a must on any development program because we cannot have widespread personal flying if the airplane is a noisy and unpleasant neighbor.

Government should also attack another very important obstacle to general acceptance of personal flying. This is safety, and it should be attacked through the development of designs or devices which will give a wider spread between low and top speeds of the personal plane. If we could have a plane which will fly under control at 40 m.p.h. or less, the safety of flying would be increased tremendously. Of course, since the airplane's principal feature is speed, the personal plane must also be able to go fast, but I think 150 m.p.h. will satisfy most would-be buyers. For an appropriation of $500,000, I am convinced we could show results in each of these fields.

The third effort would be financed by some individual wealthy enough and interested enough, or by an association of aviation firms or individuals, or by a business association which would stand to gain by widespread personal flying. I suggest here a prize contest as a method that has proved highly successful. It should be based on specifications toward which all contestants would strive, with worthwhile first, second and third prizes. I suggest a contest based on specifications for a good roadable airplane or a flying automobile.

An association of firms selling fuel and oil for automobiles and airplanes would be one logical donor of such a prize. So would an association of citizens interested in seeing our air industry built up. So would any of a fairly large number of individuals who increased their fortunes materially through the manufacture of aeronautical products during the war. The prizes might possibly be $200,000 for first, $100,000 for second and $50,000 for third.

These three efforts, carried on simultaneously for two or three years, would develop a product which could live up to the promise of its glamorous wrapping. Price reductions and greater utility would start a benevolent spiral in operation, resulting in quantity sales making possible still further price reductions and more improvements.

¶ think such a development program would produce a plane which our 900,000 waiting customers would buy. END

Letters

(*Continued from page* 6)

permission to leave from another airport is obtained from Washington, D. C." A letter requesting this permission was sent to Washington and forthwith granted to leave from our home airport, Donovan-Hughes, Staten Island, N. Y. at any time we desired. No red tape there!

Customs Division, Ottawa, Ont., advised us that all airports in Canada (excepting Dorval, Montreal) must be entered only with prior permission from customs at that city. A letter to Prince Edward Island brought an Air Mail reply granting permission to land whenever we wanted, also stating that they would notify the field manager to be on the look-out for us with fuel, etc. They requested us to telephone from the airport upon arrival. We were cleared in and out again at Charlottetown, Prince Edward Island even before the ship was refueled. The only expense was a $2 taxi fare for the customs officer. Fair enough!

To re-enter the U. S., the Commissioner of Customs, Washington, had given us permission to clear through Boston or La Guardia, N. Y. We chose Boston and with 20 minutes advance notice through cour-

FASTER TAKE-OFF
INCREASED H. P.
COOLER MOTOR
GREATER SAFETY
MOST AMAZING FRICTION PROOFING DEVELOPMENT IN THE HISTORY OF LUBRICATION!
WYNN'S FRICTION PROOFING OIL
DEFIES WEAR
REDUCES FRICTION
INCREASES H. P.
Seals bearings, gears and all moving parts with a tough film of heat-and-friction resistant lubricant that defies wear!
Test it yourself for added horsepower, smoother performance, cooler, cleaner motor, longer life. Use WFPO wherever lubrication is required.
DEALERS—Ask for demonstration and name of local distributor.
LABORATORY PERFECTED
FIELD PROVEN – GUARANTEED
WYNN OIL COMPANY • SAN GABRIEL, CALIF.

FLYERS

Here's your chance to get a

WONDERFUL CHRONOGRAPH for only **$37.50** Tax Incl.

Fine Swiss Quality . . . Precision made . . . 17 Jewel movement . . . Sweep second hand . . . Tachometer guide . . . Telemeter dial . . . 1/5 sec. to 30 min. recorder . . . Calibrates speeds . . . Luminous dial . . . Accurate stop watch . . . anti-magnetic . . . chrome and steel case.

FLYERS—this is the identical chronograph specified by the Air Forces during the war, for flyers.

You won't find a chronograph anywhere to compare with this ZENO CHRONOGRAPH at this give-away price of $37.50. Stores charge you many dollars more for such fine Swiss-made time-keeping, time-recording, time-measuring instruments. Don't pass up this chance to get yourself (or someone you want to please) a ZENO CHRONOGRAPH at the importer's own price of $37.50, tax incl., postpaid. Mail your check or money order now!

ZENO TRADING CORPORATION

Dept. Z 15 F Maiden Lane, New York 7, N. Y.

Here is my check ☐ money order ☐ for $37.50. Send me a ZENO CHRONOGRAPH. Money back within 5 days, if not fully satisfied.

(write or print plainly)

Name.....

Street.....

City.....State.....

PARIS WHITE *Nylon* SCARFS

18" x 72"

Superb white nylon extra wide, long, smart and warm. For all outdoor sports activities.

Parachute Weave, $2.50
De Luxe Taffeta, $3.25

● Write for Prices by the Yard

DEPT. F

ROY PARIS

P. O. BOX 6000 DALLAS, TEXAS

Army Full-Vision Goggles

AN 6530

(A $12.00 Value)

Cylindrical lenses, ground and polished. Decentered for accurate vision. Air vents prevent lens fogging. Rubber face pad—chamois lined. Snug comfortable fit. Ideal for Pilots, Motorcyclists, Speedboats. Please send Check or Money Order.

$3.95 POSTPAID

AIR-PARTS, INC., 723 SONORA AVE. GLENDALE 1, CALIFORNIA

tesy of CAA Boston Radio, we were cleared at Logan Airport on a Saturday evening. No overtime charge, no delay, no unnecessary questions.

So I don't have any squawk regarding Customs and Immigration services. Only squawk I do have is the increasing number of landing, parking etc. fees imposed on us "little guys." It's discouraging to private flying!

BILL ROMAIN

Staten Island, N. Y.

THE WAUKEGAN PLAN

Your article, "The Waukegan Plan—One Year Later," (October issue) hits the nail on the head. It's been quite evident to me that most of the people who drop out of flying do so because of lack of interest, and lower costs alone aren't enough to keep them interested. I should like to comment on two points that are made in the article, however.

Several ex-members of our Economy Flying Club, for instance, are quoted to the effect that they thought the club should have offered ground school courses. My conviction here is that the students who dropped out wouldn't even spare the time to fly, let alone attend ground school.

Then one or two ex-members complained that it was too difficult for them to get out to the airport. To that I say that a courtesy car was available to them by calling. Maybe calling was too much trouble.

WAYNE K. CARPENTER
Manager, Waukegan Air Service

Waukegan, Ill.

A VALUABLE SERVICE

FLYING is rendering a real service to aviation in publishing the chart calendar each month. The U. S. Coast and Geodetic Survey is making every effort to provide adequate and up-to-date aeronautical charts but the information is nullified if it does not reach the individual pilot. With the chart calendar in your magazine, which reaches so many active flyers, you are giving valuable assistance to our efforts.

ROLAND D. HORNE
Commander,
U. S. Coast & Geodetic Survey
Supervisor, Southwestern District

Los Angeles, Calif.

IT'S A POLITICIAN'S WORLD

The editorial in your September issue prompted me to write you. Our national WPA certainly was a flop but apparently we have some big politicians who must have a position, not a job, so they are trying it on a world basis. As to the situation of the air transport and manufacturing systems, I agree with you. However, most of the editorial is too soft and I wonder if it will not pass over the heads of many. Your statements on private flying are well put but you fail to say what is increasing the costs to a prohibitive degree.

Concerning the plight of the aircraft manufacturers, the White House apparently decided it would help the industry by supplanting the *Sacred Cow* with the *Independence*. Who allowed this big expenditure for the new ship in the face of the economy program? When we taxpayers travel we are forced to pay an additional 15 per cent tax while White House executives travel all over the world on our tax money, tax-free, in the newest and most de luxe aircraft. Offhand this may not appear to be very serious, but on questioning other travelers I find that the 15 per cent is going against the grain of a lot so that they are reducing their traveling. This, of course, cuts into the aircraft industry since fewer commercial planes will be required and ordered.

The most serious effect, however, is that the aircraft manufacturing industry with its plants and know-how will just fall apart in a short time and will not have the capacity for producing airplanes for national defense when an emergency again arises. But maybe this is what the politicians want.

Perhaps it would not be ethical for FLYING to emphasize much more the important points which were brought out in a quiet way. But since some people do not take time to read between the lines, the only way for the "pen to be mightier than the sword" is for conditions to be printed boldly.

S. W. BUCKLEY

Wilmington, Del.

MIXUP

On page 31 of the September issue is a picture of a plane being loaded into a DC-3 which the caption states is a Taylorcraft. You printed substantially the same photograph, calling the small plane an Aeronca, on page 98 of the February, 1945, issue. Your identification was challenged in the June, 1945, "Letters" column and you stated the NC number proved it was an Aeronca and not a Taylorcraft. Now it's a Taylorcraft. Which is it?

BOBBY DUDLEY

Wichita Falls, Tex.

● An Aeronca.—ED.

OPEN TO TRANSIENT PLANES

Princeton Airport in Princeton, Me., is now open to all transient planes. We have gasoline and oil, tie-downs, restrooms and lounge. The airport has a 4,000-foot hard-surfaced runway.

Located in the heart of the best hunting and fishing section in the country, our business is devoted mostly to hunters and fishermen. We can always furnish guides, camps, boats, etc.

W. E. KETCHEN
Manager, Princeton Air Service

MECHANIC WANTS EMPLOYMENT

Don't think I'm of the impression that FLYING is a job finder for people discriminated against, but I have the same problem as Edward H. Leeper whose letter appeared in the September issue.

I have my A&E from Roosevelt Aviation School and am also a licensed pilot. I should like to have information about any place that employs on merit rather than color.

THOMAS H. WARNER

Philadelphia, Pa.

END

The Taylorcraft 47

(*Continued from page 52*)

and six gallons of fuel (I discovered later that the main tank had not been filled), the ship got off the ground within a few seconds. Rate of climb worked out to approximately that claimed by the manufacturer: 600 f.p.m.

I found it somewhat uncomfortable to maneuver the plane freely, due mainly to the lack of leg room. That fact, plus the large size of my shoes, made it quite difficult to maneuver the ship, particularly on the ground. Hard-to-get-at heel brakes added to my trouble. In the air it's not so bad; I only had to use my toes to operate the rudder—and you use very little rudder in level flight.

In cruising flight the airplane trims up nicely and, if properly rigged, will fly hands-off in smooth air. I did notice, though, that it was quite sensitive to lateral changes in attitude. Visibility in level flight is good straight ahead, but not out the sides—especially when circling a busy airport. An overhead window might help somewhat.

I flew this particular airplane—NC-5230M— to Milwaukee and back, to see what cruising speed I could get. Cruising at 2,200 feet above sea level and using the normal 2,150 r.p.m., I averaged 86 m.p.h. for the 116 miles. Indicated air speed at cruising was between 90 and 95 m.p.h.

TAYLORCRAFT MODEL 47

Type Certificate No. 696

One 65-h.p. air-cooled Continental engine	
Wing span	36 feet
Length	22 feet
Height	6 ft. 6 in.
Empty weight	730 pounds
Gross weight	1,200 pounds
Wing loading	7.1 lbs./sq. ft.
Fuel capacity	18 gallons
Top speed	105 m.p.h.
Cruising speed	97 m.p.h.
Range fully loaded	380 miles
Service ceiling	15,000 feet
Rate of climb	600 f.p.m.

Source: Taylorcraft, Inc.

This is an excellent airplane with which to get into and out of small, rough fields. I landed it on one rough, partly-plowed field that had about 1,200 feet of usable runway into the wind. With trim full back I found it a simple matter to ease the Taylorcraft across the plowed section by holding a little power on, then putting the wheels right on the edge of the usable runway. My speed stayed at about 40 m.p.h. all this time; you don't use much runway landing that slowly. The Taylorcraft will stall and mush down (but with excellent aileron control) at about 38 m.p.h.

Maneuverability in the air is quite good, once you get your feet in place. When taxiing, you can see pretty well over the nose, and the steerable tail wheel is very effective. The dual control wheels are especially designed to conform to new safety standards. Otherwise, the Model 47 is a conventional lightplane, intended primarily to give the greatest

Essential for charter operators, executive or corporation pilots, advanced flying schools, commercial pilots, and airport control towers. Over 40 leading airlines make AIRWAY MANUAL standard equipment.

AIRWAY MANUAL

gives complete flight data, *collated for instant reference,* on all radio equipped airports and the 64,000 miles of U. S. and Canadian airways. Plan Views, Terrain Profiles, Mileage Charts, Airway Traffic Patterns, Step-down and Holding Procedures, Range and Communications Frequencies, Graphic Let-down Charts, all obstacles and major features of airports and environs.

Revisions Weekly. Service Available Any Section of United States, Canada, Alaska & Aleutians

CLIP THIS COUPON TODAY!

JEPPESEN & COMPANY (F-12)
Stapleton Airfield, Denver, Colo.
Without obligation, send information and prices on your Standard Airway Manual.
Name_____
Address_____
Equip. flown:_____

AVIATORS' BOOTS

Winter Favorites for Men and Boys

- WARM
- RUGGED
- HANDSOME
- COMFORTABLE
- ECONOMICAL

The Perfect Christmas Gift!

Now you can get these brand new Army Aviators' Boots—just released as war surplus! Wonderful for sports, outdoor work, hunting, riding, flying, school and stadium wear, "heavy" weather. Completely sheep-lined (like a mitten); heavy waterproof rubber bottoms; non-slip soles; soft brown leather uppers; spring-lock zipper with rawhide pull; two adjustable straps for real snug fit; full 10½" height.

Only $9.95 Per Pair!

Wear them with or without shoes—in every kind of weather! They're built for long, comfortable, all-round wear. Order by mail today, in time for Christmas—send check or money order (add 50c for postage and handling), or order C.O.D. Mention your shoe size. Immediate delivery. Satisfaction guaranteed.

HUGH CLAY PAULK
Dept. M-17
813 No. Kansas Ave., Topeka, Kansas or,
49 Falmouth St., Boston 15, Mass.

THREE SYMBOLS OF QUALITY AND PERFORMANCE

SENSENICH AIRCRAFT PROPELLER CO. INC.
Fixed Pitch PROPELLERS up to 250 H.P.

SERVICE & REPAIRS
PROP SHOP
On All Makes of WOOD PROPELLERS

SENSENICH Stayblade
Controllable Pitch PROPELLERS up to 165 H.P.

SENSENICH CORPORATION
LANCASTER, PA.—GLENDALE, CALIF.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946.

Of Flying, Published Monthly at Chicago, Ill., for Oct. 1, 1947

State of Illinois, } ss.
County of Cook }

Before me, a notary public in and for the State and county aforesaid, personally appeared Arthur T. Pullen, who, having been duly sworn according to law, deposes and says that he is the Business Manager of Flying and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily, weekly, semiweekly or triweekly newspaper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the act of August 24, 1912, as amended by the acts of March 3, 1933, and July 2, 1946 (section 537, Postal Laws and Regulations), printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, William B. Ziff, 185 N. Wabash Ave., Chicago 1, Ill.; Editor, Max Karant, 185 N. Wabash Ave., Chicago 1, Ill.; Managing Editor, Curtis Fuller, 185 N. Wabash Ave., Chicago 1, Ill.; Business manager, Arthur T. Pullen, 185 N. Wabash Ave., Chicago 1, Ill.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

Ziff-Davis Publishing Company, 185 N. Wabash Ave., Chicago 1, Ill.; William B. Ziff, 185 N. Wabash Ave., Chicago 1, Ill.; B. G. Davis, 185 N. Wabash Ave., Chicago 1, Ill.; A. Ziff, 185 N. Wabash Ave., Chicago 1, Ill.; S. Davis, 185 N. Wabash Ave., Chicago 1, Ill.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is ..... (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

ARTHUR T. PULLEN,
Business Manager.

Sworn to and subscribed before me this 25th day of December, 1947.

[SEAL] GEORGE H. FISHER.
Notary Public.

(My commission expires December 17th, 1950.)

Aerial Film

Save over 60% on your film costs! Use this vacuum-tin packed, short-dated film from refrigerated government warehouses. Eastman Kodak Super XX and Tri-X emulsions. Satisfaction guaranteed!

5¼"x 9 ft., per roll	$ 1.15 postpaid
5¼"x 9 ft., for 10 rolls	10 00 postpaid
5¼"x 20 ft., per roll	2 85 postpaid
5¼"x 20 ft., for 10 rolls	24 00 postpaid
7"x 15 ft., per roll	2.75 postpaid
7"x 15 ft., for 10 rolls	23.00 postpaid

Brand New PATCO (Electric) Film Developing Outfits

5½"x 25 ft. capacity, complete (Val. $95)—$44 50 net

7"x 75 ft. capacity, complete (Val. $105)—$49.50 net

Average shipping weight, 14 lbs.

HEADQUARTERS for aerial cameras, magazines, cone assemblies, mounts, dryers, all related aerial equipment. Write for list.

AIR PHOTO SUPPLY CO.
(Dept. F-12)
555 E. Tremont Ave., New York 57, N. Y.

AVAILABLE NOW!

OCTOBER, 1947

POPULAR AVIATION

(Special Issue)

Eight pages, featuring special articles on the Japanese "Emily" seaplane, plywood in aviation, and our navy's "Black Cats," night radar fighters.

10¢ copy

Send 10c (in coin) to

ZIFF-DAVIS PUBLISHING COMPANY
Dept. AE-7, Circulation
185 North Wabash Avenue
Chicago 1, Illinois

ORDER BY MAIL AT SAVINGS! *Breitling* CHRONOGRAPHS

17 Jewel Wrist Watch with 12 HOUR RECORDER

$59.50 INCLUDES TAX

World famous Swiss movement. Brand new—2 pushers—2 recorders—6 hands. Extremely accurate, solves navigation—time, speed and fuel consumption problems. Perfect stop watch for races and games. A must for flyers, yachtsmen, laboratory technicians, physicists, doctors. Non magnetic, extra flat handsome stainless steel case. Less than half the regular price. Money back guarantee, within 30 days if not completely satisfied.

WHITE PLAINS WATCH CO. River Park 19A White Plains, N. Y.

value for the money ($2,345 f.a.f.). There are no extras; standard equipment includes altimeter, air speed indicator, compass, oil pressure and oil temperature gauges and tachometer; cabin heater and brakes.

The plane's 18-gallon fuel supply is carried in two tanks: a 12-gallon tank in the left wing, and a six-gallon tank in front of the windshield. The small tank uses the conventional cork-and-wire float. It must be refilled from the wing tank by turning a valve on the instrument panel just in front of the pilot.

I learned one lesson about Taylorcraft-flying while flying this particular airplane. I subconsciously (I should say unconsciously) assumed I had full gas, because I could see the wire bobbing high on the front tank. Carelessly, I never did check the wing tank—and ended up making a precautionary landing at an airport north of Chicago. When the front tank was well on the way toward running dry, I turned the valve that would have refilled it from the wing tank. But the wire kept on going down. When I finally made that precautionary landing, the wire had stopped bobbing. I had flown about 1 hr. 20 min. on six gallons of gas. MAX KARANT

I Learned About . . .

(*Continued from page* 58)

further. Finally at about 1,000 feet, the nose bobbed up to the horizon, held for a second, then fell off again. We came out of the next dive at about 400 feet, and as I brought the nose up again, it started to fall off, then held up and fluttered. With throttle still to the dash, I kept the plane in a slight dive until we were about 20 feet off the Yukon River.

I intended to land on the snow-covered river with the ski-equipped plane, but it now seemed to be flying level satisfactorily, if somewhat groggily. I hated like the devil to land on the river as it was so blasted cold. The nearest place of human habitation was a village called Kokrines about 10 miles away. So I elected to fly about five feet off the river to Kokrines. If trouble arose, I thought I could probably crash-land the plane.

All this time the CAA radio stations at Tanana and Galena were standing by on emergency watch as all I had time to do was call them and tell them the plane was out of control. From then until the plane finally leveled off, I was a very busy boy trying to figure my way out of that one. Later, I called Tanana radio and advised them the plane was flying level and that I would land at Kokrines. But at Kokrines the plane appeared under fair control. I hated to land at the tiny native village so I continued to fly over the Yukon to Ruby, about 50 miles away.

I finally reached Ruby and landed on the ice, again almost crashing the plane as the wind got into the torn fuselage when I banked to land. I *fell* out of the plane into the snow, because my knees were shaking so hard I could not get my legs out of the cockpit. I'll never forget hanging onto the wing struts and laugh-

ing like an idiot at the expression of a native who saw the plane. The entire top of the fuselage fabric had peeled off like the top of a sardine can. Fabric on the sides, however, remained on, making a huge air pocket back of the cockpit and accounting for the extremely poor control. The trader at Ruby took me up to his home and helped relax me with a few shots of liquor, and then I took up the problem of what to do with the damaged plane.

Ruby is a village of about 300 people and had no facilities for repairing the plane. The Yukon River in the winter is about 20 or 30 feet below the river bank and if I left the plane there until spring there would be the problem of getting it off the ice when the breakup came. I remembered my method of icing on the patch. Why couldn't I ice an entire top for the fuselage.

I borrowed some flour sacks from Mrs. Nichols, the trader's wife, got a needle commonly used for sewing gunny sacks together, some strong twine, and a native to help me. We took a five-gallon can of warm water, a kalsomine brush and the flour sacks to the plane. There we stretched the flour sacks over the fuselage as tightly as we could, and sewed them to the fabric on the sides. Then we took the brush and, by dipping it in the warm water, wet the sacks. As the temperature was far below zero, the water froze in a matter of seconds. By brushing the sacks with water for about an hour, we had a smooth top to the fuselage, with the ice about a quarter of an inch thick.

After inspecting our work closely, it seemed satisfactory for a short flight so we heated the engine with a fire pot.

I took off on the ice at Ruby for Galena, 50 miles away, and followed the river en route. The ice held perfectly and after turning on the plane's cabin heater I was comfortable. The plane flew nicely and we arrived at Galena without further mishap. Army boys based there helped me put the plane in the hangar, where in about two minutes, soggy flour sacks and water were all over the place. I left the *Chief* at Galena for repairs and took Wien Alaska Airlines the rest of the way to Nome. END

Report from Washington

(*Continued from page* 54)

F. Leo, a civilian ex-newspaperman, for years a working-pressman in Maine. He will work directly under Secretary Symington. Formerly the work was directly under General Spaatz. . . . The change has Spaatz' approval and would appear to be all for the best. Steve Leo is to be counted on to recognize the value of telling the public the Air Force story in as much detail as security will allow. A diplomat, he may nevertheless be firm in blocking two-bit efforts of some of the down-the-line and self-appointed brass censors that have harried both newspapermen and AF goodwill since the war. Leo has a good staff in uniform eager to do a real job for the Air Force and the combination should work toward winning the friends the Air Force so desperately needs in these uncertain times.

Skyway No. 1

A sidelight that was kept as much out of the newspapers as possible caused a lot of Washington headaches over Skyway No. 1 between Los Angeles and Washington. Seems some senators and congressmen, with an eye to local pride, jumped all over the No. 1 idea when it was announced. Why, they inquired angrily of CAA, should the east-west route get the No. 1 tag? Wasn't Highway No. 1 from Maine to Florida? Why should California get terminal preference over that gem of winter resort areas, Florida? And so forth. CAA top brass and Blanche Noyes, head of the Administration's airmarking division, were caught flat-footed but finally used the occasion to sell some more influential people on the values of private flying.

When the fur had quit flying, another step had been made in the battle for lightplane highways. A north-south east coast skyway seems a certainty in the not distant future. Whether it will be called Skyway No. 2, or the Memorial Skyway, or Lincoln Skyway was still a question as this went to press. About the only thing that we could get in the way of a definite commitment was this: the north-south skyway will *not* be named No. 1. Conceding the logic of the arguments from east coast partisans, CAA stood firmly in favor of the east-west route getting the No. 1 rating.

Constitution

Latest word on the *Constitution*, Lockheed's biggest, is that the Naval Air Transport Service will put it to work on regular schedules about the first of January. The big fellow checked out beautifully recently on test flights with its new engines, *Wasp Majors* like those in the *Stratocruiser*. The *Constitution* originally had four 3000-h.p. Pratt & Whitney units, but changed to the 3500-h.p. models early in the summer after test flights showed that more power was needed. Chief test pilot Joe Towle and engineering test pilot Tony LeVier report that the new engines are tops and that the *Constitution* is "one of Lockheed's best flying products to date."

Engineering Progress

That the industry is determined to accelerate the trend toward improvements in the lightplane field was indicated by statements from some of its leaders to the Society of Automotive Engineers at a recent meeting in Los Angeles. John W. Thorp, of Thorp Aircraft Co., Van Nuys, Calif., and W. E. Burnham, of Beech Aircraft Corp., Wichita, Kans., were among the spokesmen for aviation.

Thorp suggested the two-cycle engine and the gas turbine as logical prospects for powerplants in the personal airplane of the future. He didn't think jet power was ready for lightplane application but that the other two types should get serious and immediate consideration. Burnham stressed the need for cutting down airplane noises. He predicted that if the industry did not act quickly in this field,

. . . HERE'S THE TRAINING YOU NEED FOR A . . .

Successful Aviation Career

Your Brayton training will qualify you for a good job with a bright future. You owe it to yourself to investigate our courses before selecting your school.

● Aeronautical Engineering

Two-year course qualifies you for earnings as high as $300 to $1000 per month with brilliant opportunities in the future.

● Base Operations & Maintenance

60 weeks' training qualifies you for interesting jobs ranging in pay from $250 to $600 and more.

● Airplane & Engine Mechanics

Qualifies you in 54 weeks for CAA Airplane and Engine Mechanics License. Earnings range from $200 to $400.

● Commercial Pilot

160 to 200 hours over a period of about 12 months qualifies you for Commercial Pilot and Radio Telephone Operator's License. Your earnings can range from $250 and up.

Brayton training is your key to the future. Finest facilities . . . experienced faculty . . . comfortable living accommodations available . . . located right on one of the nation's leading airports.

SEND NOW FOR THIS FREE BOOK

Full of information and packed with photographs, it describes Brayton courses in detail.

AERONAUTICAL TRAINING DIVISION

Brayton FLYING SERVICE, INC

LAMBERT-ST. LOUIS AIRPORT
BOX F-1 • ST. LOUIS 21, MISSOURI

TEAR OFF, SIGN AND MAIL TODAY

Just write your name, address and age on the border below and mail.

NEW U. S. AIR CORPS
A-2 JACKET

Made of topgrain cowhide on exact G. I. patterns. Silk lined, wool knit sleeves & bottom. $20.00

A-2 with Mouton Collar.. $22.50

Sizes 36 to 46. Shipped Insured & Prepaid.

NEW U. S. Army Air Force B-15
FLYING JACKET WATERPROOF ZELAN

Alpaca lined body and sleeves, full Mouton collar, 2 outside and 2 inside pockets. Wool knit wrist and bottom. Zipper front and pencil pocket on sleeve. $15.00

Shipped Insured & Prepaid.

NEW SHEEP-LINED FLYING PANTS. Sizes 36 to 46. ..... $ 9.95 P.P. 35c
NEW GABARDINE COVER-ALLS. Sizes 36 to 42. ..... 6.95 P.P. 25c
NEW SHEEP-LINED FLYING BOOTS. Sizes Small & Medium only ..... 11.50 P.P. 35c

I. GOLDBERG & CO.
429 Market St. Phila. 6, Pa.
Send for Winter Catalog F

WAISTBANDS AND WRISTLETS *Finest All Wool!*

Fit Type A-2 Navy Intermediate and Other Jackets...

Make your jacket like new with new all-wool knit wristlets and waistband. Order today!

Wristlets, pair, $1.00
Waistbands, each, $1.00
Please give jacket size.

DEPT. F
ROY PARIS
P. O. BOX 6000
DALLAS, TEXAS

INDIANA TECHNICAL COLLEGE

ENGINEERING. B.S. DEGREE IN 27 MONTHS. Aeronautical, Chemical, Civil, Electrical, Mechanical and Radio Engineering (inc. television). Drafting. 1-yr. Gov't approved for G.I.'s. Low rate. Earn board. Large industrial center. Students from 48 states, 18 countries. Demand for graduates. Enter Dec., March, June, Sept. Write for catalog.

1212 E. Washington Blvd., Fort Wayne 2, Indiana.

For great "BUYS"
in aviation
turn now to the
CLASSIFIED PAGES

FULL LINE OF A N HARDWARE
FITTINGS, PUMPS, MAGNETOS, ETC.
IMMEDIATE DELIVERY — DISCOUNTS
AERO BOLT & SCREW COMPANY
2457 Enterprise St., L.A. 21, Cal.
TRinity 5879 TRinity 5870
Agents War Assets Administration

STAMMER?

This new 128-page book, "Stammering, Its Cause and Correction," describes the Bogue Unit Method for scientific correction of stammering and stuttering — successful for 46 years. *Free—no obligation.*

GET THIS FREE BOOK!

Benjamin N. Bogue, Dept. 5285, Circle Tower, Indianapolis 4, Ind.

laws would rise to haunt pilots flying noisy planes.

Slow-turning props, perhaps of the multiple-blade and controllable types, may eliminate many of the intensive noises, he feels. Mufflers will also help. He does not feel that insulating the cockpits is the solution of the problem. "Instead of stuffing our ears," he says, "we stuff wadding around the airplane to stop the noise from coming in. The noise is still outside trying to find a way in to disturb the passengers, and is disturbing the people on the ground. More effort should be exerted to reduce the noise at the source."

Tough Going

At worst, things are wonderful here, according to another authority who dropped in to pay us a visit the other day. He is Dr. L. Gleize-Rambal, a medic sportsman pilot from Marseilles, France, and after he got through telling us how it is over there, we decided that wonderful was a poor way to describe U. S. private flying facilities.

Compared to what pilots in France face, we're in paradise. Planes cost four times as much as they did before the war—and they're the same planes, too. Gas, oil and spare parts are high and hard to get. New planes are not to be had and the old ones aren't flyable half the time. But the flyers of Marseilles, says Dr. Gleize-Rambal, are still flying. He belongs to a club which has 300 members and owns five planes. For those who cannot afford fuel for an engine, there are 15 gliders. And the good doctor says that one and all are looking forward to the day when the club will have new planes. What kind? The doctor smiles. "Only American," he says, adding: "The best."

Rain Trouble

If you have tried and failed to make rain after reading Charles L. Black's article in the November issue of FLYING—read it again. Expert testimony confirming what he said also reveals that many a rain maker, eager to do his stuff, has failed because he wouldn't play ball with Mother Nature.

"Making rain or snow is something more than merely dropping dry-ice out of an airplane," says Vincent J. Schaefer, General Electric snow maker and a pioneer in the field. "If Mother Nature does not supply these conditions at the time and place of an experiment, there is no point in going ahead. In some cases, where super-cooled clouds have not been found, temptation on the part of experimenters has proved too great and they have seeded dry ice into any cloud they could find." The results have been negative, as for example, "when an attempt was made to produce rain over a forest fire. The clouds seeded probably were not super-cooled and, as might be expected, nothing happened."

Consult your nearest weather expert before doing anything, Schaefer advises, adding five "don'ts":

1. Don't try it if there isn't a super-cooled cloud in the neighborhood.

2. Don't try it if the super-cooled portion of the cloud is not at least 500 feet thick—you will not get enough rain to make it worth your while.

3. Don't use large ice pellets. They should be no larger than the size of a pea.

4. Don't drop all your ice seeds at once. "A gradual distribution of one-and-one-half pounds per mile proved most effective in General Electric experiments."

5. Don't go to work till you determine the amount of humidity or moisture in the atmosphere beneath the cloud. If this atmosphere is too dry, any precipitation caused may evaporate before it reaches the ground.

CAA's ILS

You can take it or leave it—CAA's instrument landing system (ILS) will be the dominant new safety device on the airways this winter. Thirty terminal airports are now equipped with the system and at last count five airlines had been approved for use of the facilities. American Airlines will use the system at 15 fields, Braniff at 10, Continental at eight, Chicago and Southern at eight, and Delta at seven. Other lines are expected to gain approval before the snow flies.

Ground controlled approach (GCA), which partisans say is the answer to instrument landings and should, on the basis of its war record and present use by Army and Navy, get the nod over ILS, will play a minor role in the CAA program. Three—perhaps a few more—fields will have GCA equipment ready for action this winter. In other words, now that the shouting is over CAA has done almost exactly what it said it was going to do from the beginning—made ILS standard on the airways.

In light of the protests that have been made to ILS, and the praise showered on GCA, this might seem something of a gamble, especially if accidents this winter match those of last. We hope they don't—that the CAA system works like a charm. But if it does, it will be in direct contradiction to some authoritative testimony made to date and in the face of GCA testimony, equally well documented, that ground control can do a better job. END

Answers to Do You Know? on Page 72

1. (3) The throttle is generally opened immediately after cutting the switch in order to admit cool air to the cylinders and thus prevent after-firing.
2. (A) 1, (B) 2, (C) 1, (D) 3, (E) 4. The interpretation of the sequence is: Pittsburgh; special report number seven; ceiling measured 300 feet; sky overcast; visibility 1½ miles; light drizzle, fog, smoke; atmospheric pressure 1014.6 millibars; temperature 66; dewpoint 65; wind west, four m.p.h.; altimeter setting 29.97.
3. (1) Increase in power without change in attitude results in increased speed and hence increased lift.
4. (2) The Tortoise arrives at his destination in five hours. The Hare loses one hour (3 stops of 20 minutes each) and must therefore fly 500 miles in four hours, or at the rate of 125 m.p.h.
5. (3) A plane used privately must be inspected annually; a plane used commercially must be inspected every six months.
6. (3) At the end of the first hour he is 100 miles north (75 miles of airspeed and 25 miles of wind). During the second hour the wind blows him an additional 25 miles north. He is now 125 miles north of his base. His groundspeed on the return trip will be 50 m.p.h. (75 minus 25), thus requiring 2 hr. 30 min. to fly the 125 miles.

I Hold the World's Speed Record

(*Continued from page* 34)

Actually, going across the course was the easiest part of the flight, in my estimation, because I just leveled out as close to the ground as I could and seemed to be across before the altitude varied an appreciable amount. Going across the course my airspeed meter sat right on 600 m.p.h. The difference between indicated airspeed and true airspeed as measured from the ground was due to a combination of temperature, position error, and instrument error. The airspeed indicator used was the sensitive type similar to an altimeter in that it had a long and a short hand. The short hand indicated to the nearest 100 m.p.h. and the long hand to the nearest one m.p.h.

Making the turn was the toughest part of the flight. Commander Caldwell and I both used from 2.5 to 3 Gs in the turns and I remember that I indicated about 570 to 580 m.p.h. which was 610 to 620 m.p.h. true airspeed. That part was easy but holding a constant altitude wasn't. We had to stay below 1310 feet and there was a plane circling inside our turns at each end of the course carrying a barograph and an official observer to see that we did.

The cockpit of the *Skystreak* is so far forward that the pilot has no reference point and the least change in angle of the nose means quite a change in altitude before a correction can be made as indicated by the altimeter. I know that I tried to hold 1,000 feet around the turns to play it safe, yet because of rough air and lack of a reference point this varied as much as 200 feet each way in a single turn. Although we dived from the turn into the course we came to the conclusion this made very little difference because of the high drag at this speed. It boiled down ultimately to just plain power. I figure that of the 10 m.p.h. by which I exceeded Commander Caldwell's record seven m.p.h. was due to having more power and 3 m.p.h. was due to having a higher outside air temperature.

At present Muroc Dry Lake is the most ideal place in the United States for these speed trials and for test flights in general. It is some 13 miles long, though this distance is cut almost in half by a railroad. A plane can land any place on the lake. The lake has proved invaluable as a site for initial flights when engine failures are most likely to occur. There are a couple of other dry lakes in the vicinity which could be connected with Muroc to make an even longer runway.

The railroad crossing Muroc made an excellent guide because the official measured course was laid parallel with it and consisted of an asphalt strip 18 feet wide and three kilometers long. Low hills on each side of the lake rise to about 500 feet. We made our turns on these. The hills not only had a tendency to induce rough air but reduced our margin of safety in the turns, since we were limited to 1,310 feet above the measured course itself. The rough air I encountered caused my accelerometer to register plus 4.5 Gs and minus 2.5 Gs. Traveling at that speed in rough air is like traveling over a corduroy road. The jolts are very sharp and often there's a whole series of them one on top of the other.

The *Skystreak* is a magnificent piece of machinery. Just to look at it makes you glad you're a pilot and to know that you're going to fly it makes you feel very fortunate indeed. It was built solely for research into the transonic speed range, and carries about 500 pounds of test equipment. It is the first plane to be built in the full scale, high speed investigation being conducted by the Navy's Bureau of Aeronautics and the National Advisory Committee for Aeronautics.

It was constructed by the Douglas Aircraft Company, El Segundo, Calif., on basic specifications and designs originating at NACA and is part of a research program that will continue for many years. The jet engine, air intake ducts and test equipment occupy most of the fuselage, leaving very little space for a cockpit. With only a pad on the floor, my head touched the top of the canopy when it was closed, making it impossible for me to wear a crash helmet. On the official runs I did not wear goggles on my helmet for goggles rubbed the windshield when I pushed them up on my forehead. Also I could turn my head only about 30° before it would wedge inside the canopy. All in all it was no place for anyone subject to claustrophobia.

The cockpit is well forward so that it is almost impossible to see the wings, restricted as we are in movement. The

FOUR PLACE BT

Now!! CAA approved kit only $275.00. Beautiful upholstery complete in every respect. Easy to install. Discount to Dealers. Send for illustrated brochure.

Mf'd and for sale by

LES FARRAR AIRCRAFT SALES

900 42nd St. San Bernardino, Calif.

Phone 624-56

The

Beechcraft

is a multi-purpose

Propeller

A Beechcraft Controllable Propeller gives you the type of power you need all year round, on land, water, ice or snow. No need, now, for special props. Turn the crank or flick the switch and a safe, positive change in pitch is yours instantly . . . for shorter take-offs, faster climb, economic cruise, or those occasional "tight spots." Three basic sizes for planes from 65 to 250 horsepower, manual or electric control.

Get the facts today. See your local Beechcraft Propeller dealer for full information or write direct to Beech Aircraft Corporation.

Beechcraft

Controllable Propellers

Beech Aircraft Corporation, Wichita, Kansas, U.S.A.

ENJOY the ankle protection of these easy-feeling Justin AERO SHOES

$20.00 POSTPAID

MADE IN U.S.A.
Design Patent
No. 129261

HERE'S the snug ankle protection you need . . in a flyer's shoe that is smart and dressy looking. Lustrous brown calf leather, tough pliable leather sole, rubber heel. Full CALF LEATHER LINED for extra comfort and long wear. This is the original Justin Aero Shoe, a favorite with flyers for more than ten years. A fine American made shoe, by the makers of famous Justin Cowboy Boots. You will be pleased with this shoe. At your dealer's, or order by mail. Please be sure to give size and width.

JUSTIN BOOT & SHOE CO.
P.O. Box 548-F Fort Worth 1, Texas

TYPE A-10 AIR CORPS
WOOL LINED LEATHER GLOVES

Finest quality leather, soft and pliable, with wool lining and snug-fitting knitted wristbands. Order yours now!

Reg. $5.00 Value
$2.50

DEPT. F

ROY PARIS
P. O. BOX 6000 DALLAS, TEXAS

Give Glove Size When Ordering

STOP WATCHES

- 15 Jewel Elgins • Precision Movements
- Sweep Second Hands • One-tenth Second Timing

Sent Postpaid For Only **$9.95** ★ Cost Gov't $39.50

ORDER TODAY this precision movement STOP WATCH which was used by Army Air Corps Navigators. Ideal for Model Airplane enthusiasts. Money back guarantee if not satisfied. Sorry no C.O.D.'s.

BROPAR DISTRIBUTORS
P. O. Box 275, Dept. 72
SAN ANTONIO 6 TEXAS

INVENTORS

The question as to whether a subject matter is patentable can be substantially determined by a search of the U. S. Patent records. Without obligation, write us for full information on what steps an inventor should take to secure a Patent or Trademark.

RANDOLPH & BEAVERS
Registered Patent Attorneys
372-A Columbian Building, Washington 1, D. C.

LAW STUDY AT HOME for Personal Success and LARGER EARNINGS. 39 years expert instruction—over 108,000 students enrolled. LL.B. Degree awarded. All text material furnished. Easy payment plan. G.I. Approved. Send for FREE BOOK—"Law and Executive Guidance."

AMERICAN EXTENSION SCHOOL OF LAW
Dept. 84-FL, 646 N. Michigan Ave., Chicago 11, Ill.

wings seem to sit unusually far back and give the appearance of a pilotless missile when in flight. Although restricted in other directions forward visibility is good—which is by far the most important visibility in a plane like that.

The cockpit is very simple and the only unusual feature noticeable to an average pilot is three jettison handles instead of the usual one. One jettisons the canopy if the pilot wants to exit that way. One causes the nose section to break off just behind the pilot and in this case he has to pull a third one to clear the bulkhead from behind him after his freely-falling nose section has slowed down to a reasonable speed.

The exterior coating is an enamel with a glass-like finish. Skilled workmen worked tirelessly, rubbing it to a jewel-like smoothness, for at 600 m.p.h. skin friction is an appreciable item. At these speeds you stay clear of all rain—even a mist—for it would peel the paint off the leading edges of wings and fuselage as fast as a sand blast.

Skin friction at these speeds also means increased temperatures. At 650 m.p.h. they amount to an increase of about 70° F. Add that to 90° F. for an average day at Muroc, plus the sun's radiation, and you get temperatures inside the cockpit which no man can bear without refrigeration. Of course we had refrigeration and it worked very well on our official runs. Commander Caldwell and I each tried practice runs when the refrigeration system was temporarily inoperative and each time we had to slow down after a few minutes and come back in to land.

It is unusually quiet in the *Skystreak*. The turbine is well aft and all the pilot hears, even at 650 m.p.h., is a slight hum in the background. There's no vibration and almost no noise due to air flow past the canopy. I always wanted to fly a plane with air conditioning and with no vibration or noise. I found that in the *Skystreak*.

It was not a difficult plane to fly and most certainly does not require a superman. I think Commander Caldwell deserves a lot of credit for his part in the program. He had never flown a jet of any type prior to his arrival at Muroc on August 5, and before his official runs he was able to get only some 2½ hours in an Army P-80 and perhaps 1½ or two hours in the *Skystreak*. He is an exceptional pilot—and the Bureau of Aeronautics considers him as such or he wouldn't have been selected to try for the record.

I have been asked many times why I was selected for a part in the program. One reason was my previous experience in jets, which dates back to my original check-out in a P-59 2½ years ago—soon after I arrived at flight test at the Naval Air Test Center, Patuxent River, Md. Since then I have flown P-80s, including landings on and take-offs from a carrier. I have also flown in the North American XFJ-1, McDonnell's XFD-1 and XF2D-1, and the German Me-262. Again I have Commander Caldwell to thank for he was responsible for my selection to help him.

I have been asked how it feels to travel 650 m.p.h.—especially when it's only 50 or 100 feet above the ground. One thing I can say for certain, you really feel like you're getting some place. You're keyed up—for regardless of how much confidence you have in the airplane you suspect they wouldn't be able to find all the pieces if something went wrong at that speed, or if you made an error in judgment, or over-controlled with 100 feet or less between you and the ground. You are also very busy—not only flying the airplane and checking your instruments whenever possible, but also in trying to feel the airplane and to anticipate necessary corrections before they are actually needed.

Six-hundred and fifty m.p.h. doesn't feel like 650 m.p.h. until you are close to the ground and then you are too busy to worry very much over what will happen if something goes wrong. All in all, it is a beautiful airplane, well built, and one that flies like an airplane should at those speeds. The Navy and especially the Douglas Aircraft Company have every right to be proud of it.

I want to give my personal thanks to the Air Forces who made it possible for us to break the record. They cooperated wholeheartedly and not only furnished the speed course, for Muroc is entirely an Air Forces Base, but also furnished the cameras and crews for the official runs—and handled all the extra work and detail the official runs entailed. In addition they provided a P-80 for Commander Caldwell to check out in and for both of us to use for practice runs over the speed course. Without their cooperation they would probably still have the record they helped us to break. END

Photo Credits

The following list shows the sources from which pictures in this issue were gathered. Where a single page is indebted to several sources, credit is recorded left to right, top to bottom:

4—ARTHUR E. HAUG
6-8—JOE TILLOTSON
19—JOE TILLOTSON, 5TH COMBAT CAMERA UNIT
20-21—OFFICE OF THE AIR SURGEON (WAR DEPT.)
22-23—WALTER STEINHARD
24—DOUGLAS, INTERNATIONAL NEWS PHOTOS
25—INTERNATIONAL NEWS PHOTOS, DOUGLAS
26—CHARLES HEIB
27—RICHARD CAMERON
30—BRIDGEPORT FLYING SERVICE, INC.
32—DOUGLAS
33—USN, DOUGLAS
34—DOUGLAS, GENERAL ELECTRIC
35—CHARLES E. BROWN
36-37—ROSS-PIX
38—BARRY KRAMER
39—BARRY KRAMER, HAL MORRIS, JOE TILLOTSON
40-42—MONROE H. SWEET, ACME
43—CURTISS-WRIGHT, NACA
44—HAL MORRIS, FLORIDA NEWS & PHOTO SERVICE, INC.
45—LUSCOMBE, TEESE, LUSCOMBE
46-47—MAINE DEVELOPMENT COMMISSION
48-49—FRANK ADAMS
50—HAROLD G. MARTIN, BOWERS-BODIE
51—HAROLD G. MARTIN, BOWERS-BODIE, HAROLD G. MARTIN
52—TAYLORCRAFT
53—TAYLORCRAFT, MAX KARANT
54—BOEING
55—CARL CRAWFORD, MOUNTAIN STATES AVIATION, INC., NORTHROP
56—AAF, NORTH AMERICAN, BRITISH INFORMATION SERVICES, *The Minneapolis Star*
57—BODIE-BOWERS, *Flight*, BOEING, ACME, AVIATION ACCESSORIES CORP.
58—JOHN W. CLARK
60—USN
64—USN
74—CHARLES W. CAIN
78—HASTINGS SKY RANCH, INC.